

*Public Policy* **1** *Monograph*

# Medical Savings Accounts

Cost Implications  
and  
Design Issues



AMERICAN ACADEMY *of* ACTUARIES

# AMERICAN ACADEMY of ACTUARIES

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This paper was prepared by the Academy's seven-member Medical Savings Accounts Work Group, which is composed of actuaries knowledgeable about the potential effect of Medical Savings Accounts. This is the first report of that work group. The report examines cost implications and plan design issues that would result from enactment of Medical Savings Account legislation.

Neither the Academy nor the Medical Savings Accounts Work Group support or oppose the enactment of any Medical Savings Account legislative proposals. The sole purpose of this report is to present a clear, objective analysis of Medical Savings Accounts, intended to assist the public policy process.

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# Executive Summary

**T**he Medical Savings Account (MSA) concept has generated extensive interest this year. Some believe that, if MSAs were to become popular, they would provide sufficiently powerful incentives to covered individuals to motivate them to play a more active role in making responsible decisions on how medical care dollars are spent. Others are concerned that MSAs would neutralize utilization controls already in place in managed care plans and would place an increased burden on those most in need of health care.

This report was prepared by the American Academy of Actuaries' Medical Savings Accounts Work Group. It concerns cost implications and plan design issues that would result from enactment of MSA legislation.

## How MSAs Would Work

In most proposals, an MSA would be set up for, and owned by, an individual, and the funds in the account would be provided by the individual and/or an employer. The individual would draw on the MSA fund to pay for unreimbursed medical expenses. Under some proposals, the funds might be used for other (nonmedical) purposes as well, but only under specific (possibly onerous) restrictions.

The MSA differs from a Flexible Spending Account (FSA) in one very important respect. In the FSA, the funds in the account remain the property of the employer; any unused funds eventually revert to that employer (in most cases these are solely employee contributions). So the employee has an incentive to spend as much of the FSA money as possible: "Use it or lose it." In contrast, with an MSA, any money not used for current health care expenses belongs to the employee, may earn interest, and will be available for future rainy days. Other differences between MSAs and FSAs include the fact that individuals can decide how much to contribute to their FSA and that the annual limit in the FSA must be made available throughout the year.

MSAs would usually be built around a health care plan with copayments (such as deductibles or coinsurance) that are substantially higher than what's typically found in today's market. Note that the introduction of a higher copayment reduces the cost of health insurance because less of the health care expense is paid by the insurer and higher copayments generally encourage individuals to use fewer health care services.

As currently envisioned, in a typical MSA, the employer would make annual payments (generally in monthly installments) into each employee's account of an amount approximately equal to the difference between the cost, for that individual, of the high-deductible plan and the cost of a plan with a standard deductible. (There are other formulas that could be used, of course, and the relative success of the MSA in achieving cost savings can depend greatly on the contribution level.)

The employee would pay any bills for ongoing medical expenses from the MSA. It is important to note that the defini-

tion of "medical expenses" for the MSA could differ from what's specified in the insured plan. It could include the cost of items not covered by the insured plan, such as eyeglasses, over-the-counter drugs, cosmetic surgery, etc. One definition frequently suggested is this: the MSA would be available for all of the medical expenses currently recognized by the IRS. At the employee's option, he or she could also decide not to pay bills from the MSA, but instead pay them out of pocket and allow the amount in the MSA to accumulate for later use.

There has been speculation that MSAs could make it possible to achieve a goal that has, so far, eluded us—to bring the consumer into the health care arena as an active payer. Since MSA "owners" would be spending what would be, in effect, their own money (until the high-deductible coverage kicks in), perhaps they could learn to be smart shoppers in making health care purchases—just as they can be in buying computers or tires.

In determining the potential impact of an MSA in a particular situation, several questions should be considered: total medical costs (including potential increases due to deferred health care), tax considerations, other medical plans available to the individual, administrative expenses, and limitations on the MSA payments. To assess the effects of MSAs under various scenarios, the savings or costs that accrue from each of these elements must be evaluated and then combined. In addition, the impact on future trends in health care costs should be considered. To the extent that MSAs (or any health care financing device, for that matter) are successful in changing the utilization and administrative expenses of health care, they will have an impact on financing of health care in future years as well.

## Role of Copayments

We know that an increase in copayments by the individual (as in an increase in the deductible) will lower the cost of the health plan for two reasons. First, less of the cost of health care services will be paid by the health plan. Second, the increase in copayment will usually reduce demand by the insured individual.

With high-deductible plans, people generally use less health care services than they do with low-deductible plans (as long as they don't have some other kind of coverage, such as a spouse's employer-paid plan, to fill in the gap left by the deductible). Likewise, plans that require the individual to pay a large portion of the cost, such as 50%, will have substantially lower utilization rates than plans that require 10% or 20% copayments.

A critical question is the extent to which the existence of an MSA balance will counteract the utilization reduction resulting from the high copayment. If the insured views the MSA balance as simply another form of insurance, then the utilization might well return to the level that it would have been with a low deductible plan. If the insured views the MSA balance as personal savings, then the utilization might be at the reduced level that would have occurred without the MSA.

Higher utilization could also ensue if MSA funds were used for preventive or other services that were not covered services under a previous plan design. Examples include routine physicals, over-the-counter drugs, and cosmetic surgery. The MSA might also be used to pay for services subject to deductibles or high coinsurance that people could not otherwise afford.

## Tax and Accounting Treatment

Tax treatment and accounting restrictions can have a major impact on the appeal of MSAs to markets and the potential tax revenues of governments. Discussed below are some possible effects, from several perspectives.

**Insured (Employee).** Under current law, out-of-pocket payments and employee contributions usually must be made from after-tax monies. However, if they are passed through an employer-sponsored FSA, they can be made from before-tax monies. Typical MSA proposals would permit contributions to the MSA and payments for covered health expenses from before-tax monies. Employees would have to pay taxes on MSA disbursements for other purposes, as well as a penalty if the disbursement was made before a specific date. One alternative being proposed is to penalize such disbursements if made before age 59½.

**Employers.** Under current law, employer health care expenses for employees are fully tax deductible. MSA contributions would also be tax deductible, but the total deduction for the MSA and revised health plan might be limited to the premium for the health plan that currently exists. While many employers might take full advantage of the deductibility, there would be no requirement to do so.

**The Account Balance.** MSA proposals differ in the extent to which the investment return on the MSA would be taxed. Most proposals would permit tax free withdrawals for any IRS recognized expense. These include some charges that are not covered by most health plans.

**Managed Care.** Integrating the MSA concept with current managed care approaches, such as health maintenance organizations (HMOs), will be difficult. Employers who install MSAs will have to work carefully with HMO and other management approaches to ensure that the benefits of utilization controls currently in place are preserved. Adoption of MSAs would require major changes, such as modifying state and federal HMO laws.

## Modeling the Effect of MSAs

Modeling the effect of MSAs and high copayment plans requires three critical actuarial assumptions—the distribution of health care expenditures in the current environment, the change in utilization and cost that would result from increas-

ing copayments, and the extent to which that change would be further modified by the existence of an MSA balance.

The work group reviewed a number of studies as well as its own models and agreed on a specific distribution of health care expenditures in the current environment and a range of factors that predict the reduction in utilization and cost that would result from an increase in copayment. The range includes the set of factors used by the Health Care Financing Administration (HCFA) in analysis of health care reform proposals. The distribution and factors were used to determine the expected effect of introduction of an MSA/high deductible plan in place of a typical current plan. The work group determined that the effects of an MSA balance could range from almost fully offsetting the effect of the increase in copayments to having little impact. The difference between the two assumptions depends on the extent to which the employee views the MSA as savings or insurance. That perception, in turn, depends considerably on the design of the MSA.

The report shows the potential impact of an increase in deductible from \$200 to \$1,500 if the employer holds health expenditures constant. The total expenditures for health care costs, including administrative expenses would decline from \$3,041 to a range of \$2,695 to \$2,976. The premium for the health plan would decline to a level ranging from \$468 to \$552, with the employer paying that amount into an MSA. The average out-of-pocket expenditures of workers would fall from \$882 to a range of \$536 to \$817.

The maximum savings would be \$574 to \$677 for the 17% of employees who have no expenses reimbursed by the current health plan. The maximum increase in cost would be \$677 to \$926 for the 8% of employees with high medical expenses. About two-thirds of employees would gain financially.

## Conclusion

Increases in copayments will result in savings in the cost of health care as individuals become more involved in the financial aspects of the choice of the type and level of health care. The MSA funds will offset some or all of the savings depending on the extent to which the individual views the funds as insurance rather than savings.

If an employer decides to maintain his or her current level of expenditure for the combined MSA/high deductible plan, then the savings will pass through to the employee. Since the increase in the employee's copayments is larger than the premium reduction, some employees will have to pay more for health care than under the current program. The greatest savings will be for the employees who have little or no health care expenditures. The greatest losses will be for the employees with substantial health care expenditures.

Achieving maximum savings from MSAs will require careful design of the law enabling the establishment of MSA. Savings will also depend heavily on the individual actions taken by employers in redesigning their health plans around an MSA.

# Preface

This is the first of two reports on the actuarial aspects of Medical Savings Accounts (MSAs), prepared by a work group of the American Academy of Actuaries. This report presents information and analysis that can be of help in anticipating some of the potential effects of MSAs. It is based on recent data, projected to the current (1995) health care market. This report also discusses possible variations in designs for MSAs in combination with other kinds of health care plans that will result in differing effects on costs. The second report will analyze specific legislative proposals.

The use of MSAs has been proposed as a method of reducing and controlling health care costs, based on an underlying concept: with an MSA and a high deductible plan, relatively more of the decision on how much health care to purchase is left to the health care consumer. Some employers have introduced prototype MSAs, while the high-deductible plans that would often be used in conjunction with MSAs are now marketed by some insurance companies. However, the MSA, as currently envisioned, would require a change in tax law, so there are no current working models of these plans.

The work group reviewed a wide range of information from studies and situations that could be used to estimate the effect of an MSA/high-deductible combination. While the work group did find sufficient information to determine a range of possible effects, that range is fairly wide, because of uncertainty about the way employers and individuals would react if MSA legislation became an everyday reality. This report therefore presents and explains that range. It also presents recommendations on how MSAs and high-deductible plans could be designed to control health care costs most effectively.

A description of what a basic MSA would look like, and how it might work, is covered in Section I. Since the MSA would normally be used in conjunction with a health care plan with a deductible much higher than is typical in today's marketplace, there is an extensive discussion (in Section II) of how that change in plan design would affect the use of health care services. Section II also elaborates on the problems that might ensue if a high-deductible plan is offered, particularly if other choices are available and if healthy individuals tend to choose the high-deductible plan.

Section II presents two analytic models for analyzing the effect of high-deductible MSA plans. The work group agreed on a distribution of health care costs representative of the pool of people currently insured. The work group also agreed on a range of factors useful in predicting changes in health care costs that might be anticipated if an insured's out-of-

pocket expenses change. This effect is called "induction." However, specific changes in out-of-pocket expenses, and in total health care costs for specific populations or scenarios, could nevertheless fall outside of the ranges shown.

Section III describes many of the potential complications that could be expected if the tax law were revised to permit MSAs. Then, each employer would have to determine how he would go about integrating the MSA with the other health benefit plans currently offered to his employees. The combined program will have to be thoughtfully designed in order to achieve the employer's specific goals. Section III also discusses the tax considerations, administrative expenses, and vesting of funds.

Introduction of MSAs would mean new challenges for some of the current approaches to managing health care costs, which range in the extent of control from case management in fee-for-service plans to closed-panel health maintenance organizations (HMOs). Section III addresses these concerns and presents several ways for an employer to integrate existing management approaches, particularly HMOs, with an MSA.

The expected financial effect of an MSA/high-deductible plan is related in Section IV. The analysis assumes that the employer would maintain a constant level of contributions to the combined MSA/high-deductible plan. Section IV shows the impact of this type of design on individual employees, as well as the U.S. health care system considered as a whole. The impact will vary significantly, depending on the degree to which employees look upon their MSA as their own personal savings account.

Section V compares the cost estimates in earlier sections with the costs of insurance products now available in the open market. The analysis shows that the claims distribution and induction assumptions used in earlier sections are consistent with premiums for individual policies, when variations in demographics and patterns of selection among health care plans are taken into account. The section discusses the prototype group MSA/high-deductible plans now being offered by some employers. The work group was unable to obtain sufficient information to permit a comparison of the results experienced by these employers to the models and assumptions used in this report.

Section VI is the conclusion. It summarizes important findings from the monograph.

Following Section VI are a glossary and a bibliography. The first usage of a term defined in the Glossary will be in bold type.

# Medical Savings Accounts

**T**he Medical Savings Account concept has generated tremendous interest in recent months. Many believe that, if MSAs were to become popular, they would provide sufficiently powerful incentives to covered individuals to motivate them to play a more active role in making responsible decisions on how medical care dollars are spent. This would come about because (to some extent) insureds would be spending their own money — not someone else's. This section of the report describes one version of what an MSA would look like and provides background information for the studies in later sections.

## How MSAs Would Work

Like an individual retirement account (IRA), an MSA would be an account to which eligible employers and employees could contribute. In most instances, an MSA would be set up for, and owned by, an individual, and the funds in the account would be provided by the individual's employer. The individual would draw on the fund to pay for unreimbursed medical expenses. Under some proposals, the funds might be used for other (nonmedical) purposes as well, but only under specific (possibly onerous) restrictions.

The MSA differs from a Flexible Spending Account (FSA) in one very important respect. In the FSA, the funds in the account remain the property of the employer; any unused funds (in most cases these are solely employee contributions) eventually revert to that employer. So the employee has an incentive to spend as much of the FSA money as possible: "Use it or lose it." In contrast, with an MSA, any money not used for current health care expenses may earn interest and will be available for future rainy days. In general, therefore, this aspect of the MSA motivates the employees to use MSA funds wisely. The degree to which the MSA modifies the behavior of individuals depends heavily on the design of the MSA. Other differences between MSAs and FSAs include the fact that individuals can decide how much to contribute to their FSA and that the annual limit in the FSA must be made available throughout the year.

MSAs would usually be built around a health care plan with **copayments** (such as **deductibles** or **coinsurance**) that are substantially higher than what's typically found in today's market. Note that the introduction of a higher copayment reduces the cost of health **insurance** for two reasons. First, less of the health care expense is paid by the insurer. Second, when higher copayments are required, individuals use less health care services. This phenomenon is called the "induction" effect (discussed in Section II).

Although changing to a plan with a substantially higher deductible can be expected to result in lower utilization of health care services, combining an MSA with a high-deductible plan could result in a dampening of this effect. How much the induction effect is dampened depends on

many factors. However, the importance of careful design in each case can not be overemphasized. There are a great many variables, and the possibility of unintended side effects is always present. These considerations will be discussed later.

## Charges and Credits to the MSA

As currently envisioned, in a typical MSA, the employer would make annual **payments** into each employee's account an amount approximately equal to the difference between the cost, for that individual, of the high-deductible plan and the cost of a plan with a standard deductible. (There are other formulas that could be used, of course, and the relative success of the MSA in achieving cost savings can depend greatly on the contribution level.)

The employee would pay any bills for ongoing medical expenses from the MSA. It is important to note that the definition of "medical expenses" for the MSA could differ from what's specified in the insured plan. It could include the cost of items not covered by the insured plan, such as eyeglasses, over-the-counter (nonprescription) drugs, cosmetic surgery, etc. One possible definition is this: the MSA would be available for all of the medical expenses currently recognized by the IRS. Alternatively, the employee could decide not to pay his bills from the MSA, opting instead to pay them out of pocket, and letting the amount in the MSA accumulate for later use. To the extent that costs are not covered out-of-pocket, the difference between the deductible and the total contributions of employers and employees to the MSA would increase.

## Possible Variations for the MSA

Some proposals have suggested that the employee should have unrestricted use of MSA funds at age 59½ or later: the funds would be available for retirement, much like an Individual Retirement Account. Other arrangements are possible as well, however.

This is only one of many possible designs for a basic MSA. Here are a few possible variations:

▲ MSAs could be designed such that contributions come from employees or the government, either instead of, or in addition to, the funds contributed by the employer. The amount of the contributions could be some amount other than the difference between the annual cost of the high-deductible plan and the low-deductible plan. Also, contributions could be made more frequently than annually.

▲ MSAs could be maintained administratively by the employer, by the benefits administrator, or by some other entity—a bank, for example.

▲ MSAs might have a maximum permitted balance.

MSAs could also be set up outside an employment setting. MSAs need not be applicable to the first dollar of medical expense. The typical MSA might not work for high-risk populations. (For example, nearly all participants in these populations would be expected to exceed \$5,000 in covered charges. In those cases, the account might apply only to expenses commencing at a much higher level, such as \$5,000.)

MSAs would need not be owned solely by the consumer or insured; they could be set up as shared property. For instance, under Medicaid, where government would be likely to contribute all the funds, the insured could receive some percentage (e.g., 25%) of all the unused funds in the account, with the balance reverting to the government.

## Illustrative Plans

The report uses a consistent illustration for analysis throughout. The illustration assumes that a representative group from the currently insured population is covered by a fee-for-service plan with a \$200 individual deductible and a \$1,000 maximum out-of-pocket provision. It is further assumed that all of the individuals in the group switch to a plan with a

\$1,500 individual deductible, and all families switch to a plan with a \$3,000 family deductible. Total expenses for individuals in the family would have to exceed \$3,000 before the plan would pay any benefits.

While the illustration is used for consistency in analysis and illustration, it is important to keep in mind that it represents a theoretical model—one that would not apply throughout either the current insurance market or the market that would develop in response to MSA legislation. The report analyzes and explains the differences that would be expected between the theoretical illustrations and the changes in the market that would probably occur.

The illustrations used here also assume that both the current and modified plans are fee-for-service plans. But in fact the current market is divided among many types of plans that use managed care to varying degrees. These include preferred provider organizations (PPOs), point-of-service plans (POSs) and health maintenance organizations (HMOs). Therefore, the costs shown in the illustrations are not necessarily representative of the average nationwide cost of insurance.

Table I-1 shows the principal characteristics of the assumed current plan prior to adoption of the MSA high-deductible plan design.

**Table I-1**  
**Illustrative Standard and High-Deductible Plans**

	Assumed Current Plan		Assumed High-Deductible Plan	
	Individual	Family	Individual	Family
Deductible				
Per person	\$200	\$200	\$1,500	\$3,000
For family	N/A	\$600	N/A	\$3,000
Insured copayment after deductible	20%	20%	20%	20%
Maximum out-of-pocket				
Per person	\$1,000	\$1,000	\$2,500	\$4,000
For family	N/A	\$3,000	N/A	\$4,000

Source: American Academy of Actuaries

# Who's Paying the Bill?

Since an MSA is usually built around a plan whose copayment is substantially higher than what's typical in today's market, analyzing the potential consequences of this change is key to understanding the potential impact of the widespread introduction of MSAs.

We know that an increase in copayments by the individual will lower the cost of the health plan for two reasons. First, less of the cost of health care services will be paid by the health plan. Second, the increase in copayment will usually induce a reduction in demand by the insured individual. This section examines the induction effect and projects the premiums for high deductible plans.

## Induction Effect

There has been speculation that MSAs could make it possible to achieve a goal that has, so far, eluded the nation—to bring the consumer into the health care arena as an active payer. Since MSA “owners” would be spending what would be, in effect, their own money (until the high-deductible coverage kicks in), perhaps they could learn to be smart shoppers in making health care purchases—just as they can be in buying other consumer goods.

Clearly, in medical emergencies, shopping around for a lower-cost provider is rarely in the cards, but there is a wide range of medical services—from check-ups to blood tests to routine surgery—for which many individuals might seek out lower-cost services and, perhaps, even bargain a little. Their motivation would be to keep as much of their MSA funds as possible for themselves.

One way of expressing the relative tendency for people to spend or save health care dollars, depending on who is paying, is termed the “induction effect” (since using someone else's money tends to induce more health care spending). Since MSAs, as envisioned, don't really exist yet, there are no direct data on what their specific effect might be. There are, however, studies that show how health care expenditures can change in relation to what proportion of the cost the individual consumer must bear.

## How Induction Works

How does induction work? An induction factor of 50%, for example, would mean that, if an individual incurred \$100 of expense for health care when these services are paid for by an insurer, that person would incur \$50 of expense for such services if there were no insurance, and the individual had to pay all the expenses out of pocket. The change in **incurred expenses** can result from a change in the usage of the service (e.g., more or fewer office visits) or a change in the unit cost

of the service (e.g., same number of office visits, but a higher or lower cost per visit).

The induction factor, as used in this report, is applied to the increase in the copayments that is a feature of most MSA/high-deductible plan designs. It will be used to measure the reduction in demand attributable to increased copayments. For example, if an individual were to have \$10,000 of covered charges under a plan with maximum out-of-pocket expenses of \$1,000, and the induction factor were 30%, the expected covered charges would decrease to \$9,100 under a plan with maximum out-of-pocket expenses of \$4,000. The \$900 reduction in demand is calculated as shown in Table II-1.

Table II-1  
Effect of Induction Factor

1. Copayments under plan with \$1,000 maximum out-of-pocket	\$1,000
2. Copayments under plan with \$4,000 maximum out-of-pocket	\$4,000
3. Increase in copayments [(2)—(1)]	\$3,000
4. Induction factor	30%
5. Decrease in demand [(4) * (3)]	\$900

Source: American Academy of Actuaries

## Induction in Research Literature

There are not many studies on the effect of insurance on the demand for health care services because of the difficulty of separating the effects of induced demand from the effects of risk segmentation. Perhaps the most important study on the effect of insurance on consumption of health care services is the Rand Health Insurance Experiment, conducted between 1974 and 1977 in Dayton, Ohio; Seattle, Washington; Fitchburg, Mass.; Charleston, S.C.; and Georgetown County, S.C. The sample of families enrolled in the experiment was generally representative of the under-age-65, non-wealthy population. The experiment involved 5,809 persons in various kinds of designs for fee-for-service plans, and data on 20,190 person years of experience were collected. Manning et al. (1987) and Newhouse (1994) are excellent summaries of the experiment and its major findings.

Induction factors can be derived from the Rand Health Insurance Experiment as well as other studies. Related studies that recognize the problem of risk segmentation include the following:

▲ Scitovsky and Snyder (1972) analyzed data gathered when Stanford University employees changed to a plan with a 25% coinsurance for physician services; the rate under the previous plan had been zero.

▲ Scheffler (1984) analyzed the impact of the introduction of a 40% coinsurance in the United Mine Workers health care plan.

▲ Newhouse et al. (1974) used survey data to analyze the impact of insurance on physician visits. In a study published in 1978, Newhouse concluded that full coverage led to twice as many physician visits as compared with no coverage.

▲ Greenlick and Darsky (1968) compared prescription drug use among those paying a 9% coinsurance rate with a randomly selected sample of the community with no coverage.

▲ Smith and Garner (1974) analyzed the impact of the introduction of a Medicaid drug benefit in Mississippi.

▲ Cherkin et al. (1989) examined the effect on HMO physician office visit utilization after a \$5.00 copay for physician office visits was introduced.

## Developing Induction Factors

The development of any set of induction factors is, to some extent, a subjective exercise—any two people will almost inevitably disagree about them. And even if there were general agreement on a particular set to be used for one purpose (analysis of national health care proposals for instance), that same set might not be appropriate for another purpose, such as what happens when an employer installs a specific benefit package.

The work group reviewed the analysis of information from the listed studies, as well as the specific experience of its own members. One set of factors deemed relevant was that used by the Health Care Financing Administration (HCFA) in its analysis of health care reform proposals.

Although the HCFA factors might be appropriate for measuring moderate changes in copayments for the general population, they might not be appropriate for analyzing major changes in copayment structures, like those that might be expected from introducing a high-deductible plan. In particular, the induction effect of a \$100 increase from a \$200 deductible would probably be much greater than the induction effect of a \$100 increase from a \$1,000 deductible. Also, it was noted that the HCFA factors were based largely on the Rand study, and that the management, delivery, and mix of health care services have changed dramatically since the study was performed.

Table II-2A shows a range of possible induction factors.

**Table II-2A**  
Range of Induction Factors Used in Analysis of Change in Copayments and MSA Balances

	Induction Factor		
	Low	HCFA	High
Type of Health Service			
Inpatient hospital	0.3	0.3	0.4
Prescription drugs	1.0	1.0	1.25
Other	0.4	0.7	1.25

Source: American Academy of Actuaries and Health Care Financing Administration

The factors were developed based on information from the studies of induction mentioned above, and on individual experience of work group members. Some work group members thought that factors used should be toward the higher end of the range, and some members thought that they should be below this range.

The wide range of possible induction factors results because existing studies do not address, definitively, how induction varies with the many complex, interacting considerations that influence real-life health insurance situations. These considerations include the levels of deductibles and coinsurance in old versus new plans, population demographics, the presence and effectiveness of managed care in the old and new plans, how well the plan is communicated, provider practice patterns, and so on.

However, specific changes for specific populations could fall outside of these ranges. For example, an increase of \$100 in the deductible for a fee-for-service plan with low copayments and little case management would probably have an induction effect higher than the highest numbers in the range. On the other hand, introduction of a deductible in a tightly managed HMO would probably have an effect below the lowest numbers in the range.

The work group agreed to use the HCFA factors and methodology in determining the potential effect of high deductible plans and MSAs in the following analysis. Use of the full range shown in Table II-2A would have masked the effects that are analyzed below. One set of factors is not appropriate for all uses. The factors used should be carefully considered in the context of the specific situation. Factors useful for analysis of a national health care proposal could very well be inappropriate for installing a benefit plan for a specific employer.

## High Deductibles And Plan Design

Deductibles interact with other elements of plan design, and they must be viewed in context to assess their effects. This is true whether one is evaluating a health insurance plan proposed in a piece of legislation, or a specific plan designed to cover a company's employees.

For example, the cost-detering effect of deductibles is influenced by other cost-sharing provisions, such as coinsurance, out-of-pocket maximums, annual maximums, lifetime maximums, and scope of insurance coverage. These provisions also determine how effectively a high-deductible plan will be in protecting its insureds against catastrophic expenses.

Deductibles sometimes exclude certain types of services, which may have their own separate deductibles, coinsurance, maximums, etc. A workable high-deductible plan design must be based on a conscious decision on whether or not to incorporate any of these features.

▲ **Emergency and accident services.** Often reimbursed at 100% of charges with no deductible, which relieves the insured of having to worry about what is or is not covered in a crisis situation. However, plans with this feature may require some special limitations to prevent over-utilization of expensive emergency room services.

▲ **Preventive services.** May be reimbursed at 100% with no deductible, because many believe they reduce total medical costs by motivating employees to maintain good health. For example, dental insurance plans often reimburse appropriate preventive services at 100% for this reason.

▲ **Mental health, prescription drug, and physician office visits.** Often have their own deductible and coinsurance structure aimed at deterring excessive utilization.

▲ **In- and out-of-network managed care services.** Typically, they are subject to different deductibles and coinsurance levels that are designed to encourage the use of in-network providers. HMOs and network plans do not usually offer high-deductible products, but the network approach may be effective (e.g., “centers of excellence” for certain procedures such as heart surgery).

The tendency of high deductibles to deter medical care utilization entails its own complexities. For example, health insurance from another source, which “fills” the gap in coverage created by the high-deductible, can neutralize much (or all) of the deterrent effect.

## Coordination of Benefits

Separate coverage provided through the spouse’s employer is a common source of “other” health coverage. Certain regions, and certain employers, have substantial proportions of employees whose spouses have other-employer coverage. The impact of the other coverage is affected by a health plan’s coordination-of-benefits provision. The determination of which plan is the primary payer (pays first), versus which plan is secondary, is usually stipulated by state law. However, the formula used by the secondary plan to coordinate coverage can vary substantially in its relative generosity. In order of decreasing generosity, the common coordination approaches (terminology varies) are:

▲ “Coordination of benefits” approach computes the secondary plan’s payment based on the full covered charge, but stipulating that payments from primary and secondary plans not total more than the covered charge. In practice, the secondary plan usually pays 100% of the copayments required by the primary insurer.

▲ “Exclusion of benefits” approach reduces the covered charges by the amount paid by the primary insurer, then applies the secondary plan’s copayments to the reduced amount as if that were the covered charge.

▲ “Carve-out” approach computes the secondary plan’s copayments as if the secondary payer were to pay the full bill according to its benefit design, but then subtracts the payments by the primary plan. This means that the secondary plan could pay zero if it were identical to the primary plan. It is most often used with Medicare coordination.

In areas where a dominant local employer offers a rich health insurance plan, other employers in the area frequently

design their benefit plans so as to encourage couples to take full family coverage from the dominant employer. In this kind of situation, high deductibles may achieve much of their cost reduction merely by transferring costs from one employer to another, rather than reducing total health care costs in the region.

The Rand study excluded persons and families with other sources of coverage—for instance, coverage through a spouse’s employer. Therefore, the Rand study must be applied very carefully in estimating the deterrent effect of high deductibles for certain populations or employers.

In addition, the deterrent effect varies with income level, local cost of medical care, and other factors. For example, affluent individuals could go through a \$5,000 deductible as if it didn’t exist.

## Deductibles and Inflation

Deductibles that are set as a specific dollar amount erode over time. Medical care cost increases and increased utilization cause more services to exceed a given deductible level, so that services whose costs already exceeded the deductible do so by a greater amount. Therefore, it is important for an employer to change deductibles in accordance with changing conditions if he wants to preserve his present induction savings. One way to do this is by indexing the deductible and the out-of-pocket maximum.

## How Individuals Choose

Deductibles also interact profoundly with participant selection in an insurance program that includes multiple options on the type of coverage. The high-deductible option in such a program cannot be designed in isolation.

Participants tend to choose the option they think will offer them the greatest financial benefit. (This tendency, by knowledgeable employees, to choose the most advantageous plan is often termed “adverse” selection by employers, because it costs them more money.) When the participants have to pay more for a richer coverage, higher utilizers of medical care tend to choose the richer plans, while lower utilizers opt for the leaner plans.

If the plan options are priced so as to increase the employee contribution rate in response to high costs, a destructive cost spiral can result for the richest benefit option. However, multiple-option programs in a controlled situation, such as an employer health plan, can be designed so as to avoid the spiral, by maintaining the same relative level of employee contributions among the various options, from year to year. This approach raises the entire option price structure as a whole, in order to obtain sufficient revenue to support the program by substituting higher cost plans with employee contributions for low cost plans.

The key point here is that a high-deductible option cannot be designed in isolation. The impact of the high deductible on costs and coverage of the insured interacts with several significant choices and factors.

## Basis for Calculations

Analysis of the effect of a high-deductible/MSA plan must be based on a valid distribution of charges. The work group reviewed a number of datasets that show distributions of charges for insured plans. Two public sources are the Society of Actuaries (SoA) 1992 Indemnity Plan Medical Expense Survey and the National Medical Expenditure Survey (NMES). Two work group members provided additional datasets not publicly available, based on their own experience analyses.

After reviewing the four datasets, the work group agreed that the NMES, SoA, and the work group's dataset all provided a reasonable representation of the distribution of charges for currently insured people in the United States.<sup>1</sup> Since the work group's dataset was disaggregated by age group and a adult/child group, it was agreed that the work group's dataset was most appropriate for the analysis in this report. The close match of this dataset with the NMES and SoA was persuasive to the work group in supporting the use of the work group's dataset as representative of the insured population.

Table 11-2B, Figure II-1, and Figure II-2 are based on the work group's dataset and show the expected distribution of covered charges for a fee-for-service plan for the adult insured population in 1995. At the extremes, 17% of the population will have minimal or zero charges, and 12% will have charges greater than \$5,000 (the charges for these people account for 77% of all expected charges). The charges do not include **administrative expenses**.

<sup>1</sup>See technical Appendix for more detailed information regarding the development of these calculations and a comparison of these alternative datasets.

**Table II-2B**  
American Academy of Actuaries Medical Savings Accounts  
Work Group's Dataset—Adult Only, 1995

Band	Percentage of Claimants in Band	Percentage of Claimants in Band
\$0-\$500	52.79%	2.85%
\$500-\$1,000	13.98	3.68
\$1,000-\$2,000	11.63	6.27
\$2,000-\$3,000	5.71	4.74
\$3,000-\$4,000	3.39	4.49
\$4,000-\$5,000	1.55	2.62
\$5,000-\$6,000	0.96	1.92
\$6,000-\$7,000	1.34	3.11
\$7,000-\$8,000	1.20	3.32
\$8,000-\$9,000	0.84	2.70
\$9,000-\$10,000	0.47	1.68
\$10,000-\$15,000	2.39	10.86
\$15,000-\$20,000	1.42	9.33
\$20,000-\$25,000	0.47	3.93
\$25,000+	1.86	38.50
	100.00%	100.00%

Source: American Academy of Actuaries

Note: A non-managed plan adjustment was performed.

A family distribution was developed from the NMES data, since that database reports by family unit and was shown to be similar to the individual distribution dataset. Two adjustments were necessary to develop a family distribution with a similar cost basis as the individual dataset. First, the NMES dataset was adjusted to the same cost basis as the original dataset using the following process:

The average claim from NMES was determined as A

The average claim from the individual dataset was determined as B

The average individual claim (B) was adjusted to an equivalent family rate by multiplying the B by 2.6=C (the 2.6 is the typical ratio of family to individual premium).

Each claim in the NMES dataset was multiplied by the ratio of C to A.

Second, the NMES dataset counts single households as "families". Since family coverage would cover households of two or more individuals, an estimated distribution of single households was removed from the family dataset. The adjustment was made by subtracting the individual dataset from the NMES dataset, after the above adjustment to place both datasets on the same cost basis.

The SoA is a survey of charges covered by insurance. NMES reports on all health related expenses including those not covered by insurance such as over-the-counter drugs and cosmetic surgery. Feldstein and Gruber adjusted to NMES study to include only physician and hospital expenses. This adjustment probably produced charges that were very close to those that would be covered by insurance. There are probably some charges in the NMES analysis that would not be covered, such as cosmetic surgery. There may be others charges, such as prescription drugs, that were removed. However, further information on the Feldstein and Gruber adjustments were not available. (More detailed documentation on these calculations is available upon request.)

## Analysis

The tables that follow compare the changes in premiums and out-of-pocket copayments that result when copayments are increased. The premiums were determined through a two-step process. First, the copayments were determined for the illustrative current plan and then for the high-deductible plan. Second, the initial covered charges were reduced by an amount equal to the increase in copayments, multiplied by the induction factors. Finally, the copayment formula was applied to these reduced covered charges to determine the expected payments by the plan.

The result of (1) percentages of persons in the covered charges category times (2) the payments is the expected premium in 1995 dollars before **administrative expenses**. The gross premiums include an estimated administrative expense

Figure II-1

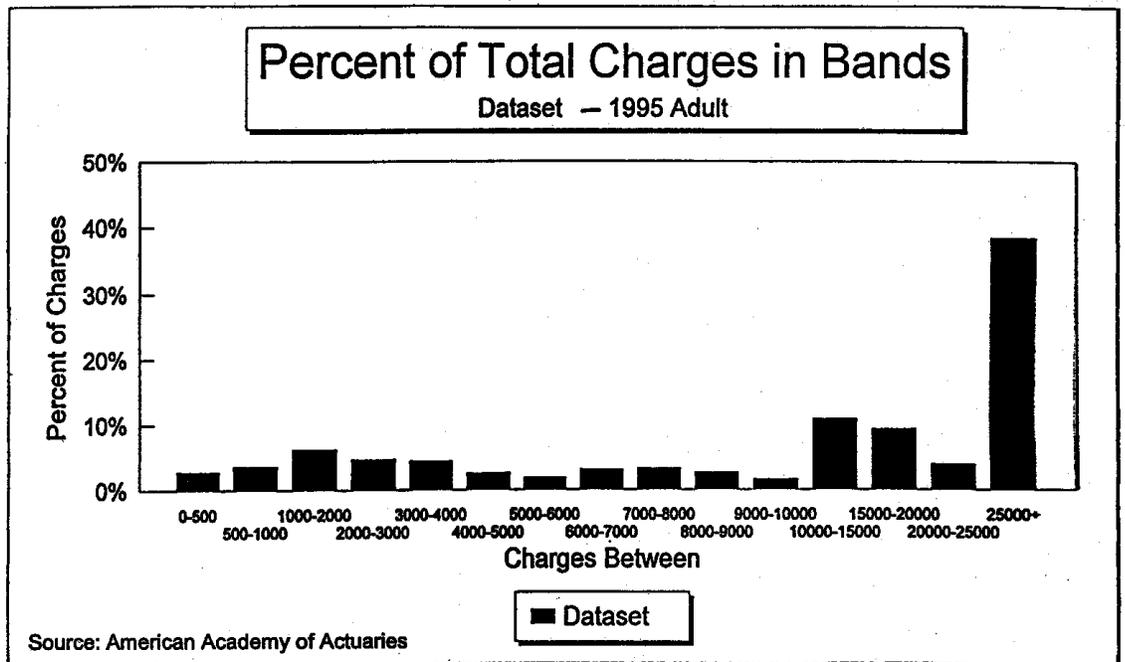
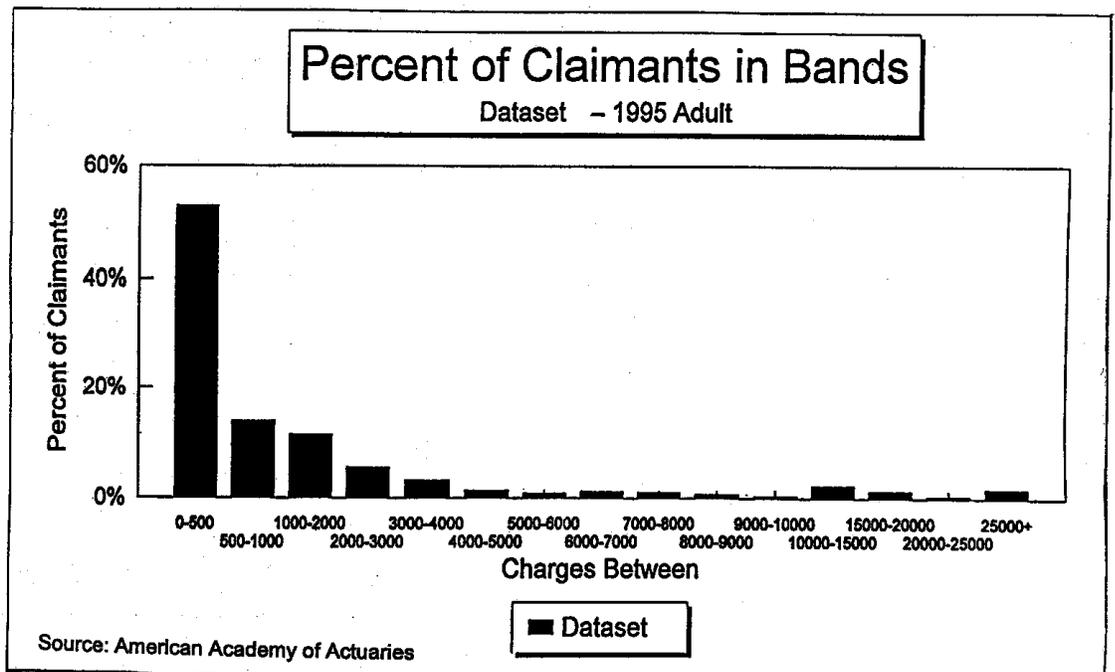


Figure II-2



of 15% of health care payments. This estimate for administrative expenses was based on a study by Hay/Huggins for the Congressional Research Service (*Administrative Factor Analysis for Health Plans in Regional Alliances*), which determined that the average expense for all insured plans in the United States was 15% of payments.

With standard-deductible plans, there are a high number of relatively low-cost items for which administrative expenses represent a high percentage of the claim payments. These will

not be incurred with a high-deductible plan. On the other hand, the insurer will expend considerable expense in managing the high claims filed under the high-deductible portion of the MSA/high-deductible plan. Many expenses, such as premium taxes and commissions (for insured plans), will apply equally to all plans. As a reasonable approximation, the report uses 15% for both the low-deductible and the high-deductible plans. The 15% administrative expense calculation for high-deductible plans will be made on a smaller base.

**Table II-3**  
**Cost Effect of Change to \$1,500 Deductible Plan for Individuals**

Plan	\$200 Deductible, \$1,000 Maximum Out-of-Pocket <sup>a</sup>	Before Induction <sup>b</sup>	\$1,500 Deductible, \$2,500 Maximum Out-of-Pocket		
			Low Induction <sup>c</sup>	After Induction HCFA Induction <sup>c</sup>	High Induction <sup>c</sup>
1. Premium	\$2,699	\$2,178	\$2,030	\$1,996	\$1,920
2. Out-of-Pocket	341	794	\$697	642	\$522
3. Total Health Expenditures [(1) + (2)]	\$3,040	\$2,972	\$2,727	\$2,638	\$2,442

Source: American Academy of Actuaries

<sup>a</sup>Cost of illustrative standard plan using American Academy of Actuaries distribution.

<sup>b</sup>Cost of illustrative high-deductible plan before induction.

<sup>c</sup>Cost of illustrative high-deductible plan considering the range of induction factors.

Table II-3 shows the premium and out-of-pocket expenses that would result if the average insured person were moved into the high-deductible plan, assuming that the person had no other choices for coverage. Before taking induction into consideration, the premium would decrease from \$2,699 to \$2,178, because of the application of the higher copayments. The insured's out-of-pocket expenses would increase from \$341 to \$794. The total health expenditures would decline slightly, because no administrative expenses would be associated with the insured's out-of-pocket payments. The effect of induction is shown using each of the three sets of factors from Table II-2A.

Tables II-4A and II-4B show, for individuals and families, respectively, the premiums for various high-deductible plans. The premiums were determined by the following process:

1. The increase in copayments from the assumed current individual plan was determined for each health care expense in the work group's dataset.
2. The increase in copayments from the assumed current family plan was determined for each health care expense in a family distribution, based on the NMES model.
3. The reduction in health care expense resulting from the induction effect was determined by applying the HCFA assumptions and method to the increase in copayments.
4. The copayments of the high-deductible plan were then applied to the revised health care expenses, to determine the aggregate health care costs reimbursed by insurance.
5. The aggregate insured health care costs were increased by 15% to account for administrative expenses.

**Table II-4A**  
**Cost of Different Copayment Designs—Individual Plan**

Deductible/ Maximum Out-of-Pocket	Premium	Reduction from Baseline Premium
Baseline		
\$200/\$1,000	\$2,699	-0-
\$1,000/\$2,000	2,176	523
\$1,500/\$2,500	1,996	703
\$2,000/\$3,000	1,871	828
\$3,000/\$4,000	1,666	1,033
\$4,000/\$5,000	1,501	1,198
\$5,000/\$6,000	1,369	1,330

Source: American Academy of Actuaries

Note: Relative cost of plans after consideration of induction, before consideration of the MSA.

**Table II-4B**  
**Cost of Different Copayment Designs—Family Plan**

Deductible/ Maximum Out-Of-Pocket	Premium	Reduction from Baseline Premium
Baseline		
\$400/ \$2,000	\$6,567	-0-
\$1,000/ \$2,000	6,170	397
\$2,000/ \$3,000	5,411	1,156
\$3,000/ \$4,000	4,848	1,719
\$4,000/ \$5,000	4,385	2,182
\$5,000/ \$6,000	3,989	2,578
\$6,000/ \$7,000	3,661	2,906

Source: American Academy of Actuaries

Note: Relative cost of plans after consideration of induction, before consideration of the MSA.

## Practical Considerations

This discussion shows how a plan that wasn't designed with sufficient forethought could end up losing much of the savings attributable to the induction effect of a high-deductible plan. This is the dampening effect we referred to earlier. While it is possible that a sponsor of a tightly controlled plan can introduce design constraints that preserve much of the induction savings, it might be much harder to accomplish that goal in a loosely-regulated national plan. Absent restrictions, employees would be free to select from plans with a range of copayments and co-ordination features. Employers and insurers could (and many would) design their plans so as to take advantage of the selection process. Restrictions could narrow the freedom of employers, insurers, and employees to select against the program, but such restrictions would narrow the range of choices individuals could make. Also, enforcement of increased restrictions would add to the administrative expense of the program.

In the least regulated system, Congress would simply enact the tax framework necessary for MSAs, and permit employers, states, and individuals to change their health insurance within that framework. Employers and insurers could replace the current plans with high-deductible plans—but that would not be a requirement. Employers would also be free to maintain their current level of expenditures for health care or reduce, or increase, those payments.

Individuals would be free to select from among the range of insurance products available. For example, when a choice was available, the healthier individuals would tend to select the high-deductible, low-cost plan, while the less healthy would

tend to choose a low-copayment plan. In many families, one member would select a low-copayment plan, while another family member who works for another employer would select a high-deductible plan, or choose not to be covered. Or, if available, all family members would select high-deductible plans from their respective employers and rely on the coordination-of-benefits provisions to pay most or all of covered charges.

As a consequence, the high-copayment plans would cover the healthiest individuals, and the lower-copayment plans would cover the less healthy individuals. That selection process would, in turn, result in increases in premiums for the low-copayment plans and decreases in premiums for the high-deductible plans.

## Effects of Selection

Table II-5 shows the potential premium levels that would result from the selection process if individuals were free to select either the current or the high-deductible plan. The calculation assumes that three-fourths of the individuals with no significant health care expenses would select the high-deductible plan. It was also assumed that half the individuals with the highest health care expenses would select the high-deductible plan and that half would select the current plan. For individuals other than those with insignificant health care costs and those with high health care costs, the percentage selecting the high-deductible plan was graded between 75% and 50%. The selection would be greater for the higher deductible plans and lower for the relatively low deductible plans. Table II-5 only shows the same selection at each point.

**Table II-5**  
**Effect of Selection**

Deductible/ Maximum Out-of-Pocket in High-Deductible Plan	Premium Before Selection		Premium After Selection	
	\$200 Deductible Plan	High Deductible Plan	\$200 Deductible Plan	High Deductible Plan
\$1,000/\$2,000	\$ 2,699	\$ 2,176	\$ 4,343	\$ 1,585
\$1,500/\$2,500	\$ 2,699	\$ 1,996	\$ 4,343	\$ 1,430
\$2,000/\$3,000	\$ 2,699	\$ 1,871	\$ 4,343	\$ 1,330
\$3,000/\$4,000	\$ 2,699	\$ 1,666	\$ 4,343	\$ 1,171
\$4,000/\$5,000	\$ 2,699	\$ 1,501	\$ 4,343	\$ 1,048
\$5,000/\$6,000	\$ 2,699	\$ 1,369	\$ 4,343	\$ 950

Source: American Academy of Actuaries

Note: Analysis based on the change in cost of plans if both are offered to a standard population.

# Design of Medical Savings Accounts

**T**here are two principal design themes for employer-sponsored MSAs: (1) the key considerations when an employer is contemplating a switch to an MSA as a possible health care arrangement and (2) some of the complexities entailed in using an MSA arrangement when a managed care system like an HMO or a PPO is already in place.

## Considerations in Using MSAs

In deciding whether an MSA makes sense in a particular situation, several questions should be considered.

▲ **Total Medical Costs.** What will the total medical costs be under the proposed plan design, including all costs paid out of the MSA account, corridor, and other out-of-pocket expenses, and insurance coverage? The sum of all the medical costs paid from the MSA and insurance plans should be compared with the costs of other types of medical coverage.

▲ **Tax Considerations.** What are the tax consequences to the various parties? Costs or benefits can accrue to various parties, depending on the particular tax laws in place. The tax environment can also create strong incentives for changing behavior.

▲ **Administrative Expenses.** What are the administrative expenses associated with combining the MSA with the insurance coverage? One would generally expect that the expenses associated with administration of an MSA would be much lower than for an insurance coverage (less processing time, charge adjudication, selling, and other costs). However, remember that it is the total costs that are critical.

▲ **Vesting.** How much will be left as a remaining balance in the MSAs, which are vested in the employees? While these are not consumed as medical expenses, they will be part of the cost to the funder, because any unspent balance will revert to the employee.

To assess the effects of MSAs under various scenarios, the savings or costs that accrue from each of these elements must be evaluated and then summed. In addition, the impact on future trends in health care costs should also be considered. To the extent that MSAs (or any health care financing device, for that matter) are successful in changing the utilization and administrative expenses of health care, they will have an impact on financing of health care in future years as well.

## Total Medical Costs

With high-deductible plans, people generally use a lot less health care services than they do with low-deductible plans (as long as they don't have some other kind of coverage to fill in the gap left by the deductible). Likewise, plans with high coin-

surance, such as 50%, will have substantially lower utilization rates than plans with 10% or 20% coinsurance. When an MSA is added to a high-deductible plan or a plan with high coinsurance, each insured can look up on the MSA in one of two ways, in any particular situation:

▲ As a type of insurance coverage, similar to the standard low-deductible coverage in that services are mostly paid for by a third party, after deductibles are satisfied. Insureds who adopt this view would have little incentive to reduce use of services.

▲ Similar to a personal savings account. Insureds who adopt this view would have considerable incentive to reduce use of services that would be paid for from the MSA.

Appreciating this distinction is critical to determining the precise effect of MSAs on utilization.

If employees have "ownership" of the MSA, and think of it as a personal savings account, their utilization of health care services would be similar to, or slightly higher than, utilization in the associated high-deductible plan. Higher utilization could ensue if MSA funds were used for preventive or other services that were not covered services under a previous or current plan design. Examples include routine physicals, and dental or vision services. The MSA might also be used to pay for services subject to deductibles or high coinsurance that people could not otherwise afford.

If the sense of ownership is diminished, or if the workings of an MSA are not effectively communicated to employees, utilization could increase substantially. When employees fail to perceive their MSA as a kind of personal savings account, utilization should begin to approach that of lower-deductible or low out-of-pocket policies. If the incentive is consistent with that of an FSA, we would expect the utilization to be even higher than with the low-deductible policy, because of the "use it or lose it" provision.

## Tax Considerations

Tax treatment and accounting restrictions can have a major impact on the appeal of MSAs to markets and the potential tax revenues of governments. Discussed below are some possible effects, from several perspectives.

▲ **Insured (Employee).** Under current law, out-of-pocket payments and employee contributions usually must be made from after-tax monies. However, if they are passed through an employer-sponsored FSA, they can be made from before-tax monies. Typical MSA proposals would permit contributions to the MSA and payments for covered health expenses from before-tax monies. Employees would have to pay taxes on MSA disbursements for other purposes, as well as a penalty if the disbursement were made before a specific date. One alternative being proposed is to penalize such disbursements if made before age 59½.

▲ **Employers.** Under current law, employer health care expenses are 100% tax deductible.

▲ **Tax on Investment Return.** Under current law, any interest on investments in the MSA would be taxed as ordinary income at the applicable marginal tax rate. Under various proposals, these investment earnings are not taxed until withdrawn. Some proposals would require taxation of the inside buildup.

▲ **Uses of Account Balances.** Under most proposals, MSA withdrawals may be made for any IRS medically recognized expense. So any changes in IRS rules would change both patterns and levels of utilization.

## Administrative Expenses

The administrative expenses associated with an MSA can vary widely, depending on how the MSA is designed. The illustrative analysis used here assumes that the MSA would not be subject to premium taxes, commissions, or extensive reporting for tax qualification. In that case, the MSA administrative expenses should run around 2% of the total MSA contributions in a given year. The current plan and high-deductible plan component of the MSA/high-deductible plan, included administrative expenses of 15% of covered charges, based on the analysis presented earlier.

## Vesting of MSA Balances

Balances in tax-qualified plans would be subject to federal minimum vesting requirements. To promote the employee's sense of ownership of the MSA funds, it might be helpful to have full and immediate vesting of the account balance.

## The MSA and Managed Care

Integrating the MSA concept with managed care presents special problems, particularly when an HMO is involved. In many cases, both federal and many state HMO laws would have to be modified to be an integral part of a high-deductible MSA plan. There are two ways to integrate the MSA concept with the prevailing methods of managing health care costs:

▲ Offer managed care as a separate option, alongside the prototype MSA described here.

▲ Try to integrate managed care within the framework of the MSA itself. This approach, however, is fraught with difficulties—legal, operational, and administrative (expenses).

## The HMO, or Insured PPO, as an Employee Choice Alongside the MSA

One major problem with this first approach is employer cost. A second problem concerns the incentives given to employees at enrollment time.

For employers who currently offer a choice between an HMO and a low-deductible plan, it is assumed that the new choice would be between the HMO and the high-deductible plan combined with an MSA. If employee contribution rates have been set such that the employer cost of the two current arrangements is approximately the same, it will be a good idea to apply this same principle to the new arrangement.

Keeping the employer cost the same suggests that the employer contribution to each MSA would not be equal to the total difference between the cost of the low-deductible plan and the high-deductible plan; instead, it would be adjusted in accordance with the rate of employee contributions. As noted above, it is possible to design an MSA that accepts employee contributions, thus leaving the combined (employer plus employee) contribution to the MSA approximately the same.

There are two potential scenarios where an MSA and an HMO are options. Under the first, the employer would continue to pay premiums to the HMO, without regard to the level of contribution being made to the MSA. However, if, as could easily be the case, the cost of the HMO is lower than the cost of the low-deductible plan, an employer might discover that the MSA/high-deductible arrangement is costing more than the HMO (or insured PPO). This would, to a large extent, depend on the level of contribution the employer would make to the MSA. If a significant number of employees in the HMO believed they would be better off financially by switching to the MSA/high-deductible arrangement, it may well be that the employer's total costs would increase.

Bear in mind that employee selection patterns are very often difficult to predict. They introduce pricing uncertainties that would affect any multi-option program, including an MSA.

Historically, the early enrollments in HMOs seem to consist of a younger subset of the population, although heavily weighted towards families, who consider important the rather unlimited low-cost access to primary care. With an option for an MSA/high-deductible arrangement, many of these younger employees—particularly the single ones, would conclude that they could save more money with the MSA (see Section IV). A shift of younger employees to the MSA would increase the average age of the population remaining in the HMO, resulting in higher rates for the HMO and greater apparent savings in the MSA arrangement.

There is another way to handle situations in which both an HMO and an MSA are offered as options: Let employees enroll in the HMO, paying for it with the employer's premium for the high-deductible plan, plus a portion of the contribution to the MSA. Since many HMO prices are lower than the cost of a traditional fee-for-service plan, this strategy would guarantee that a balance was preserved in the MSA, which could be spent on other miscellaneous medical expenses, or saved. While this arrangement might be more attractive to the employee, and appear equitable to all, the fact is that in those cases where the HMO was less expensive than the original fee-for-service plan under a non-contributory plan, the employer's cost for HMO enrollment increased to the point

where it was the same as the previous fee-for-service plan. The shift of the younger HMO enrollees back into the high-deductible indemnity plan, after they come to recognize the possibility of profiting from an MSA, would still be a major possibility.

Nevertheless, depending on the shifts in enrollment and how quickly such movements occurred, it may be possible for an employer to offer HMOs, or insured PPOs, as a choice along with an MSA plan.

## Possible Integration of HMO/PPO Within an MSA

It may be very difficult to integrate an HMO into the framework of an MSA, since HMOs do not, typically, use deductibles. It might be possible, in some cases, to integrate a managed care program into an MSA, but there could also be serious problems. For example, currently, an all-purpose deductible is not allowable under a federally qualified HMO, and is probably excluded under most state statutes as well. In addition, offering a closed-panel HMO through an MSA would destroy the apparent freedom conveyed by an MSA, to select any provider and purchase services not offered under the HMO benefit plan. So, it may well be that the only practical means of relating an HMO to an MSA arrangement would be to offer them as separate options.

Here are a few potential approaches to integration (which need further research):

▲ Some HMOs might find MSAs useful in controlling utilization of outpatient and office services. In principle, HMOs could develop for such services a schedule of “charges,” which members could pay for from their MSA funds. The scale of “charges” could be set below the prevailing fee-for-service charges, and still deter unnecessary utilization. Any savings from reduced utilization would be used to fund the MSA.

▲ It remains to be seen whether such an approach would be viable in practice. A key question is whether the reduced utilization would produce enough savings to fund the MSA. In addition, the HMOs that already control outpatient and office services effectively are unlikely to find this approach attractive.

▲ A typical MSA could be included as an Exclusive Provider Organization (EPO) product. All services would still have to be obtained from the HMO network, and free use of the MSA account for non-covered or non-authorized services would not be possible. Side by side with the fee-for-service MSA, it is possible that an HMO MSA could compete with a somewhat lower deductible and lower corridor—and still end up on a financially sound basis. This option would be most attractive to an Individual Practice Association (IPA) model that reimburses on a fee-for-service basis.

▲ One problem with this arrangement, though, is that the large deductible makes it impossible to use capitation, unless the employee agrees that some part of the MSA money is to

be used for capitation (e.g., primary care). Also, many integrated plans (staff models, closed-panel group practice plans) do not fully know how much a particular service costs within their system. Fee-for-service charge rates might look somewhat high compared with discounted rates available in the market, but it is presumed that utilization would be controlled to a point where the total cost would still be efficient. An HMO's effectiveness could be imperiled if it unbundled a closed panel such that physicians no longer had an incentive to control costs through capitation.

▲ The “managed MSA” might build in aspects of a PPO or a POS plan, which would make it somewhat more like the original concept of the MSA. The HMO or PPO network could be offered as a low-cost source of care to people covered through the MSA/high-deductible insurance program. Since they had the option of going outside the network, all the care would have to be unbundled, which might make it impossible for a fully integrated program that owned its own hospital to participate.

Because of the additional complexity, there would have to be a new incentive—in addition to a statement that negotiated prices are more favorable in the PPO or HMO—in order to keep patients in the network, instead of seeking care elsewhere. At a minimum, this would involve balance billing, wherein 100% of the fees paid out of the MSA would be reflected in meeting the deductible within the network, whereas only 80% would go toward the deductible if they went outside of it (possibly, a large element of balance billing could be involved). The MSA might be used to pay the balance billing, as well as 20% coinsurance, but this could not be used to satisfy the deductible (which counts only network services).

The complexity of this approach could give rise to dissatisfaction among employees, especially if they had presumed that the MSA were going to offer them more than they in fact got from it. The complexity of claim processing would also add to the administrative expense.

It would be very difficult, under this arrangement, to explain to an employee exactly how much his out-of-pocket will be when he reaches the stipulated deductible. Still, it seems possible that advertising negotiated or low fee levels in the network could provide the incentive to use the network, thus producing the utilization control the employer desires. At this point, it is unknown whether the preferred network (with utilization controls to limit services to those medically necessary) would integrate well with the MSA's basic incentive—for the employee to save his own money.

▲ The employer should consider how to adjust for the benefits that are mandated in the various states (assuming no ERISA preemption). For example, state laws now require first-dollar coverage of certain tests, immunizations, pre-natal care, etc. In the managed care option, this might be capitated; in the MSA option, it could be included with the premium for the high deductible plan, although this would complicate the task of communicating how the \$3,000 deductible works. One design approach might be to capitate primary care.

Typically, primary care capitation involves only some 10%–20% of the basic health care cost, which could be taken out of the MSA. The state-mandated coverages could be included.

Remember that, regardless of the employer's wishes, the fully insured high-deductible plan is still subject to all the mandated benefits. Presumably, MSA coverage could be adjusted if an employer wishes to carve out such items as mental health, prescription drugs, etc.

▲ Another approach to integrating an HMO with an MSA arrangement would be to pay to the HMO a premium that would cover only the relatively expensive services like in-hospital care, including professional components; day surgery, including hospital outpatient or surgi-center fees; and other services related to expensive care. Then, the MSA would cover only outpatient care, and any referral services required for diagnosis prior to inpatient care.

While some accommodation to managed care might be possible within the framework of an MSA, some physicians in managed care organizations might object. At least one attraction of managed care, and a reason for its lower inpatient cost, is the relatively easy access to, and full coverage of, primary and preventive care. To the extent that having an MSA and saving the money in it motivates families to avoid spending money for primary care and early access, physicians may feel they have lost the ability to control their patients' acute illnesses and chronic conditions. If physicians feel they will not be able to treat their patients properly (because patients can go outside the network [e.g., PPO or POS] or because they are discouraged from seeking early treatment because it involves spending money out of their MSAs), they may oppose the idea of integrating the HMO with the MSA, which might then force the HMO to consider the dual-choice arrangement as its only viable option.

# Combining High-Deductible Plans with MSAs

**S**ection II discussed the induction effect. Here, we will attempt to quantify that effect, on (1) the expenditures of the average employee, and (2) the average total claim cost and administrative expenses. Also, we briefly analyze the various winners and losers that would result from a shift from the low-deductible plan to the MSA/high-deductible plan arrangement. Finally, we discuss the potential effect of the arrangement on employers, including some of the factors that would influence risk and selection.

**Table IV-1**  
**Employee Savings—Individual Plan**

Deductible/ Maximum Out-Of-Pocket	\$200/\$1,000		\$1,500/\$2,500		
	Proportion of MSA Considered as Savings	Not Applicable	10% Low Effect	50% Medium Effect	90% High Effect
Employer Costs <sup>a</sup>					
1. Premium					
1a. For Administrative Expense		282	220	215	209
1b. For Claims		1,877	1,471	1,436	1,398
2. Subtotal [(1a) + (1b)]		\$2,159	\$1,691	\$1,651	\$1,607
3. MSA Contribution					
3a. For Administrative Expense		0	9	10	11
3b. For MSA Claim Fund		0	459	498	541
4. Subtotal [(3a) + (3b)]		\$0	\$468	\$508	\$552
5. Total [(2) + (4)] (80% of \$2,699)		\$2,159	\$2,159	\$2,159	\$2,159
Employee Costs <sup>b</sup>					
6. Premium					
6a. For Administrative Expense		70	55	54	52
6b. For Claims		470	368	359	350
7. Subtotal [(6a) + (6b)]		\$540	\$423	\$413	\$402
8. MSA Contribution					
8a. For Administrative Expense		0	2	2	3
8b. For MSA Claim Fund		0	115	125	135
9. Subtotal [(8a) + (8b)]		\$0	\$117	\$127	\$138
10. Total [(7) + (9)] (20% of \$2,699)		\$540	\$540	\$540	\$540
11. Out-of-pocket medical expenses		\$342	\$851	\$772	\$672
12. MSA Contribution [(3b) + (8b)]		0	\$574	\$623	\$676
13. Net employee cost [(10) + (11) - (12)]		\$882	\$817	\$689	\$536
14. Employee Savings (\$) \$882 - (13)]		N/A	\$65	\$193	\$346
15. Employee Savings (%) [(14) / \$882]		N/A	7%	22%	39%

Source: American Academy of Actuaries

<sup>a</sup>Assumes that the employer will predict the savings from copayment change and pay that amount to an MSA. Total employer costs (line 5) are held constant.

<sup>b</sup>The total of premium share plus out-of-pocket medical expenses less the MSA contribution. Line 13 is net annual employee cost. Lines 14 and 15 show reduction in net employee cost.

## The Average Employee

The case considered here is a switch from the low-deductible plan to a combination of a high-deductible plan with an MSA. This illustration assumes that the employer will freeze his contributions (line 5 of Tables IV-1 and IV-2) and thus reflects all savings back to the employee who contributes a relatively small part of the total plan cost. In evaluating this possibility, it is necessary to consider whether this is a realistic assumption for the employer.

**Table IV-2**  
**Employee Savings—Family Plan**

Deductible/ Maximum Out-Of-Pocket	\$200/\$1,000		\$3,000/\$4,000		
	Proportion of MSA Considered as Savings	Not Applicable	10% Low Effect	50% Medium Effect	90% High Effect
Employer Costs <sup>a</sup>					
1. Premium					
1a. For Administrative Expense		\$685	\$529	\$519	\$509
1b. For Claims		\$4,569	\$3,525	\$3,460	\$3,392
2. Subtotal [(1a) + (1b)]		\$5,254	\$4,054	\$3,979	\$3,901
3. MSA Contribution					
3a. For Administrative Expense		0	24	25	27
3b. For MSA Claim Fund		0	1,176	1,250	1,326
4. Subtotal [(3a) + (3b)]		\$0	\$1,200	\$1,275	\$1,353
5. Total [(2) + (4)] (80% of \$7,869)		\$5,254	\$5,254	\$5,254	\$5,254
Employee Costs <sup>b</sup>					
6. Premium					
6a. For Administrative Expense		171	132	130	127
6b. For Claims		1,142	882	865	848
7. Subtotal [(6a) + (6b)]		\$1,313	\$1,014	\$995	\$975
8. MSA Contribution					
8a. For Administrative Expense		0	6	6	7
8b. For MSA Claim Fund		0	293	312	331
9. Subtotal [(8a) + (8b)]		\$0	\$299	\$318	\$338
10. Total [(7) + (9)] (20% of \$7,869)		\$1,313	\$1,313	\$1,313	\$1,313
11. Out-of-pocket medical expenses		\$973	\$2,173	\$2,004	\$1,798
12. MSA Contribution [(3b) + (8b)]		N/A	\$1,469	\$1,562	\$1,657
13. Net employee cost [(10) + (11) - (12)]		\$2,286	\$2,017	\$1,755	\$1,454
14. Employee Savings (\$) [\$2,644 - (13)]		N/A	\$269	\$531	\$832
15. Employee Savings (%) [(14) / \$2,286]		N/A	12%	23%	36%

Source: American Academy of Actuaries

<sup>a</sup>Assumes that the employer will predict the savings from copayment change and pay that amount to an MSA. Total employer costs (line 5) are held constant.

<sup>b</sup>The total of premium share plus out-of-pocket medical expenses less the MSA contribution. Line 13 is net annual employee cost. Lines 14 and 15 show reduction in net employee cost.

It is assumed that the employee contributed 20% of the cost of the low-deductible plan and that both the employer and the employee would continue to contribute the same amount to the new arrangement, to cover both claims and administrative expenses. The assumed expense rates are 15% for the low-deductible and the high-deductible plans and 2% for the MSA. This analysis traces the change in costs to the typical employee, considering both the employee contributions and the change in out-of-pocket claims expense.

A critical question is the extent to which the existence of an MSA balance will counteract the utilization reduction resulting from the high copayment. If the insured views the MSA balance as simply another form of insurance, then the utilization might well return to the level that it would have been with a low deductible plan. If the insured views the MSA balance as personal savings, then the utilization might be at the reduced level that would have occurred without the MSA.

The following table shows the effect of three alternatives to the employee's view of the MSA. The "low effect" case assumes that the employee will consider only 10% of the MSA balance to be savings. This has the highest cost of the three alternatives because the employee considers almost all of the MSA balance to be the same as insurance.

The "medium effect" assumes that the employee will view half of the MSA balance as savings and half as insurance. The "high effect" assumes that the employee views almost all—90%—of the MSA balance to be savings.

There will be considerable savings to the employee in the high effect case, but little or none in the low effect case. This consequence serves to emphasize the point made earlier on the need for proper design of each plan and for effectively communicating this plan design with employees. In the estimation of some, it is likely that an employer would freeze his estimate of the high-deductible premium cost based on the experience of his high-cost health plan to be sure that the induction effect is likely to reduce the cost of both the high-deductible plan and the cost to the employee. As the induction effect occurs, the employer could restructure the estimate of the high-deductible premium and the amount to put into the MSA based on experience.

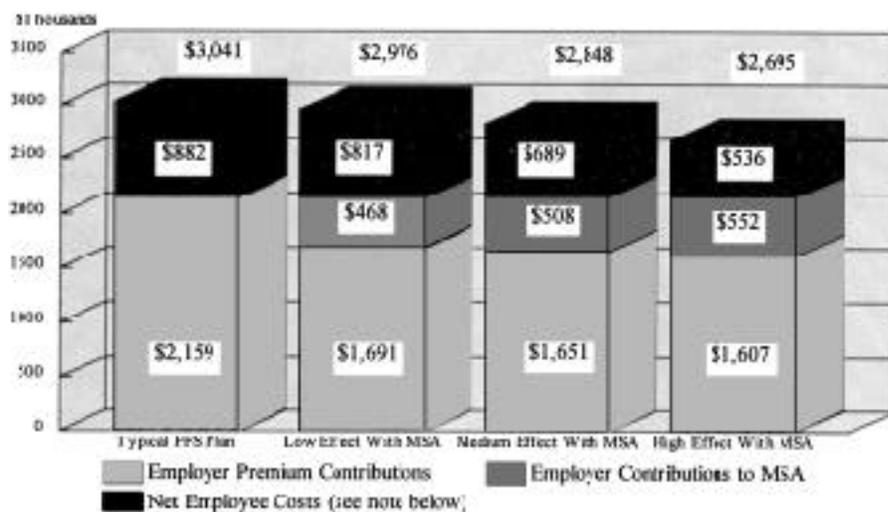
The lack of any experience data will make it more difficult to price the MSA arrangement than a traditional product. Employer costs and employee savings can be significantly different— either higher or lower— than anticipated, particularly for those employers who venture into new territory as the pioneers in MSAs.

Table IV-1 shows the result for an individual plan. Figure IV-1 graphically compares employee savings for an individual plan, based on low effect, medium effect, and high effect assumptions. Estimated employee savings resulting from the use of a high-deductible plan combined with an MSA range from \$65 under the low effect scenario to \$346 under the high effect scenario. Table IV-2 shows the result for a family plan.

## Total Claim Cost and Administrative Expense

Tables IV-3 and IV-4 show the impact on health care claim costs, and on administrative expense, for individuals and families, respectively. The figures are summed from the appropriate boxes in Tables IV-1 and IV-2. The saving in total health care claim costs is heavily dependent on the extent to which the employees consider the MSA as personal savings. In contrast, the savings in administrative expense is not much affected by the employees' attitudes toward their MSAs.

**Figure IV-1**  
Health Insurance Spending for a Typical Fee-for-Service (FFS) Plan Compared with a High-Deductible Plan Combined with a Medical Savings Account, Based on Low Effects,<sup>a</sup> Medium Effects,<sup>b</sup> and High Effects<sup>c</sup>



Source: American Academy of Actuaries

<sup>a</sup> Assumes that the employee will consider 10% of the MSA balance to be savings.

<sup>b</sup> Assumes that the employee will consider 50% of the MSA balance to be savings.

<sup>c</sup> Assumes that the employee will consider 90% of the MSA balance to be savings.

Note: Net employee costs are composed of employee premiums used for administrative expenses and claims and MSA expenses used for administrative expenses and claims less the direct employee contribution to the MSA. Typical FFS plan in this figure refers to a plan with a \$200 deductible. The three plans referred to that are combined with an MSA have a \$1,500 deductible.

**Table IV-3**  
**Health Care Claim Costs and Administrative Expense—**  
**Individual Plan**

Deductible/ Maximum Out-Of-Pocket	\$200/\$1,000		\$1,500/\$2,500	
	Proportion of MSA Considered as Savings	Not Applicable	10% Low Effect	50% Medium Effect
Health Care Claim Costs				
1. Premium (For Claims)	\$2,347	\$1,839	\$1,795	\$1,748
2. Employee out-of-pocket	342	851	772	672
3. Total [(1) + (2)]	\$2,689	\$2,690	\$2,567	\$2,420
4. Savings (\$) [\$2,689 - (3)]	N/A	\$(1)	\$122	\$269
5. Savings (%) [(4) / \$2,689]	N/A	0%	5%	10%
Administrative Expense				
6. Premium (For Administrative Expense)	\$352	\$275	\$269	\$261
7. MSA Contribution (For Administrative Expense)	N/A	11	12	14
8. Total [(6) + (7)]	\$352	\$286	\$281	\$275
9. Savings (\$) [\$352 - (8)]	N/A	\$66	\$71	\$77
10. Savings (%) [(9) / \$352]	N/A	19%	20%	22%

Source: American Academy of Actuaries

Note: This table shows the allocation of employer/employee payments from Table IV-1 to direct health care costs and to administrative expenses. Lines 4 and 5 show the net change in direct health care costs. Lines 9 and 10 show the change in administrative expenses.

## Winners and Losers

These analyses considered the average result for an employee in the typical plan. Clearly, not all employees would have the same result. Whenever the approach to health care financing changes (the proposed MSAs are no exception), some employees will do better than average, and some will do worse. These tables show activity during the year. They do not show balances that may accumulate.

An analysis of the distribution of claims for the individual plan is shown in Table IV-5. This provides an indication of how the results of some individuals in the group can vary from the average. These underlying data are the same as that in Table IV-1. Table IV-6 shows the age and sex distribution of the adults with the highest net gain and the highest net loss that result from switching from the current plan to the MSA/high-deductible arrangement, based on the “medium” (50%) savings effect. It is assumed in this table that all individuals are covered by the same plan, and that the MSA contribution does not vary. The distributions would change if the MSA amounts and/or the deductibles were varied by age and sex categories.

## Effects on Employers

Let's look at the overall effect on the employer's benefit plan, assuming all employees are in the high-deductible medical plan with an MSA. Our standard illustration has assumed that the

**Table IV-4**  
**Health Care Claim Costs and Administrative Expense—Family Plan**

Deductible/ Maximum Out-Of-Pocket	\$200/\$1,000		\$3,000/\$4,000	
	Proportion of MSA Considered as Savings	Not Applicable	10% Low Effect	50% Medium Effect
Health Care Claim Costs				
1. Premium (For Claims)	\$5,711	\$4,407	\$4,325	\$4,240
2. Employee out-of-pocket	973	2,173	2,064	1,798
3. Total [(1) + (2)]	\$6,684	\$6,580	\$6,329	\$6,038
4. Savings (\$) [\$6,684 - (3)]	N/A	\$104	\$355	\$646
5. Savings (%) [(4) / \$6,684]	N/A	2%	5%	10%
Administrative Expense				
6. Premium (For Administrative Expense)	\$856	\$661	\$648	\$661
7. MSA Contribution (For Administrative Expense)	N/A	29	31	33
8. Total [(6) + (7)]	\$856	\$690	\$680	\$669
9. Savings (\$) [\$856 - (8)]	N/A	\$166	\$176	\$187
10. Savings (%) (9)/\$856]	N/A	19%	21%	22%

Source: American Academy of Actuaries

Note: This table shows the allocation of employer/employee payments from Table IV-1 to direct health care costs and to administrative expenses. Lines 4 and 5 show the net change in direct health care costs. Lines 9 and 10 show the change in administrative expenses.

**Table IV-5**  
**Winners and Losers—Individual Plan<sup>a</sup>**

Proportion of MSA Considered as Savings	10% Low Effect	50% Medium Effect	90% High Effect
1. MSA Contribution (from Table IV-1)	\$574	\$623	\$677
2. Average Gain (from Table IV-1)	\$65	\$193	\$346
3. Percentage of Employees Who Are Winners	61%	74%	74%
4. Average Gain	\$414	\$449	\$608
5. Percentage of Employees Who Are Losers	39%	26%	26%
6. Average Loss	\$483	\$552	\$414
7. Maximum Loss	\$926	\$877	\$827
8. Percentage of Employees With Maximum Loss	8%	8%	8%

Source: American Academy of Actuaries

<sup>a</sup>Represents activity throughout the year.

Note: This table shows the distribution of average gain (refers to out-of-pocket gains, not funds left in an MSA) by category based on the American Academy of Actuaries distribution.

employer will put the difference between the high-cost (low-deductible) premium and the high-deductible premium into the MSA, with any reduction in health care costs due to induction plus administrative savings also being added to the MSA. This means that employers will not save any cost unless the induction factor is higher than used in the estimate or administrative savings are more than the estimate, all other things being equal.

**Table IV-6**

**Winners and Losers—Individual Plan, Age and Gender Distributions, Based on the Medium (50%) Effect**

Category	Total	Aged 20–34		Aged 35–49		Aged 50–64	
		Men	Women	Men	Women	Men	Women
% Winners	73.5%	85.5%	70.1%	78.9%	72.8%	65.1%	67.4%
Average Gain	N/A	\$514	\$465	\$474	\$438	\$434	\$442
% Losers	26.5%	14.5%	29.9%	21.1%	27.2%	34.9%	32.6%
Average Loss	N/A	\$444	\$561	\$465	\$565	\$471	\$573
% With Maximum Gain	17.4%	27.7%	19.5%	19.8%	17.5%	5.2%	14.9%
Average Gain	N/A	\$623	\$623	\$623	\$623	\$623	\$623
% With Maximum Loss	8.2%	2.6%	11.5%	4.5%	8.9%	10.8%	12.1%
Average Loss	N/A	\$877	\$877	\$877	\$877	\$877	\$877

Source: American Academy of Actuaries

Note: It is assumed that all individuals are covered by the same plan, and that the MSA contribution does not vary. The distributions would change if the MSA amounts and/or the deductibles were varied by age and gender categories.

Because of the leverage exerted on the high-deductible plan, it would be expected that the inflation rate in the high-deductible premium would be several percentage points higher than the inflation trend in total medical care cost, as long as the deductible remained constant. If inflation should continue at trend rates common over the past decade (recent trend rates have been comparatively low), the premium for the high-deductible plan would show up as a higher and higher percentage of the total plan cost.

Many employers who offer cafeteria plans have let their employees receive a constant-dollar contribution, added to a percentage of pay to apply to the various optional benefits. This type of arrangement lets the employer shift more of the cost to the employee, by not increasing the constant amount and by limiting the increase in contribution to the inflation in payroll cost for the employee.

The MSA/high-deductible plan could be treated the same way. The employer could leave the high-deductible plan unchanged for a few years—paying the increase in that premium, but freezing the amount of the MSA contribution. Depending on the balances in the MSA accounts, the employer might limit any additional contributions to build up a balance in the account to a pre-defined level, thus equalizing results, to some extent, for employees with high claim costs.

The costs under the high-deductible plan, in all likelihood, would not be reduced dramatically, but some reductions in overall costs could emerge because of the induction effect and large corridor. Thus, it might be possible for the employer to freeze the benefits, including the MSA contribution, for several years, as the induction process comes to exert its effect.

As noted earlier, a critical element here is the possibility of coordination-of-benefits offsets. If, in fact, an employee covers his or her family and the spouse is employed elsewhere with a low-deductible benefit plan, the couple may well decide to cover the spouse or family twice. The spouse's health care expenses would be paid by the other employer, which would likely yield a large residual balance in the MSA.

This is also a high-risk element in cafeteria plans: employees can buy high-deductible plans, and use coordination-of-benefits provisions to secure an increase in income. In some cases, the employee might terminate coverage altogether, and yet still receive the same allowance under the cafeteria program referred to above.

In this case, most of the employee's cost of health care would be transferred to another employer, which would permit the current employer to give the employee an increase in pay, deferred stock, or some other kind of option related to investments and savings. There is only one solution to this type of self-selection: require that an individual can only be covered one plan.

### Potential Effect on Health Care Inflation

Research conducted by HCFA's Office of the Actuary shows that the increase in the proportion of health expenses paid through third-party payments (by both health insurers and government programs) has played a substantial role in the rapid increase in health care costs. According to this research, every ten percentage point increase in the proportion of health care costs paid by third parties results in a two percentage point increase in the rate of health care inflation. This acceleration persists for 8 to 10 years. Health insurance arrangements that increase the proportion of health care costs paid out-of-pocket and reduce the proportion paid by third parties can play a substantial role in reducing health care inflation.

### Risk and Selection

In all likelihood, the effectiveness of reducing utilization of health care services under an MSA will be highly dependent on (1) the relationship of cost to risk and (2) the extent of selection—adverse or positive—that occurs.

The illustrations shown in this report assume that the cost/risk relationship generally recognizes factors such as

individual versus family coverage and geographic area, while other factors such as age, sex, health status, and types of services are not recognized. Neither adverse nor positive selection is reflected in the illustrations.

## Relationship of Cost to Risk

If a plan is able to maintain a reasonable relationship between risk and cost, the induction factors shown in the illustrations could be much higher. Conversely if some form of reasonable relationship is not maintained, induction factors could be much lower.

For instance, a design that does not vary the deductible or MSA contribution by age for single individuals in groups that show significant variation in the ages of those covered, could increase cost substantially. This "single contribution" design will produce higher costs, because low-cost individuals will reap a higher-than-expected MSA return, thus reducing savings in the arrangement as a whole. Meanwhile, higher-cost individuals will tend to exceed the deductible rather quickly, thereby reducing their incentive to control utilization. Moving toward a design that focuses excessively on younger or older individuals, or lower or higher costs, will either increase cost further or make the design more unattractive to higher-cost individuals.

One alternative is to allow some variation in contribution and deductible levels, according to cost or risk level. If that is done, the employee will gain a more reasonable level of incentive and expected return; this arrangement should lower costs while at the same time boosting participation. However, varying the contribution and deductible levels by age would increase the complexity of administration.

## Adverse or Positive Selection

Measurement of costs must, by necessity, be on an aggregate basis. If only the healthiest employees are choosing the MSA arrangement, then achieving lower costs for the MSA arrangement, as compared to other options, should not be the criterion used for measuring success or reducing costs. Rather, costs should be measured across the entire group and all the options available. If costs increase despite a low cost for the MSA subset, that is an indication of adverse selection in the group as a whole.

On the other hand, MSAs might be used to promote positive selection. For instance, if they encourage healthier individuals to stay in the system, rather than leave it, and less healthy individuals are not disadvantaged in the process (through higher out-of-pocket costs than before), then total participation will increase and the average cost per person will decrease. This cycle could become the opposite of the so-called "death spiral" in which the healthier individuals continually leave the system and the average cost per person rapidly escalates as the less healthy are left behind.

## Estimating the Induction Effect and Premium

See Table IV-7 for explanation.

**Table IV-7**  
Method of Calculation Used to Estimate the Induction Effect and Premium

	Low Expenses	Moderate Expenses	High Expenses
1. Expenses under current plan	\$ 500	\$2,000	\$100,000
2. Current plan benefit (80%/\$200 Maximum \$1,000)	240	1,440	99,000
3. Current plan costs including 15 percent administrative	276	1,656	113,850
4. Current plan out-of-pocket (1)-(2)	260	560	1,000
5. Out-of-pocket under new plan before induction (80%/\$1,500 Maximum \$2,500)	500	1,600	2,500
6. Average induction effect	.75	.82	.34
7. Reduction in expenses due to induction [(5)-(4)]*(6)	180	853	510
8. Expenses under new plan(1)-(7)	320	1,147	99,490
9. New plan benefits	0	0	96,990
10. New plan costs including 15 percent administrative	0	0	111,539
11. New plan out-of-pocket (8)-(9)	320	1,147	2,500
12. MSA contribution	621	621	621
13. Portion of MSA contribution considered to be insurance	311	311	311
14. Out-of-pocket under new plan, before induction, net of MSA "insurance" (5)-(13)	189	1,289	2,189
15. Reduction in expenses due to induction with MSA. [(14)-(4)]*(6)	(53)	598	404
16. Expenses under new plan (1)-(15)	553	1,402	99,596
17. New plan benefits	0	0	97,096
18. New plan costs including 15 percent administrative	0	0	111,660
19. New plan out-of-pocket (16)-(17)	553	1,402	2,500

Source: American Academy of Actuaries

Explanation of calculations:

The individual and family distributions were used to determine the premiums, out-of-pocket costs, and induction effect of the various proposals.

The calculations for each cell in the distribution were performed as follows. Three examples are shown: One for an individual with no expenses, a second for an individual with moderate expenses, and a third for an individual with high expenses.

It was assumed that expenses under the assumed current plan (80 percent coinsurance/ \$200 deductible/ \$1,000 maximum out-of-pocket) would be equal to the starting distribution.

The average induction factor was determined based on the distribution of the expenses among hospital (30% factor), prescription drugs (100% factor) and other (70% factor). The increase in out-of-pocket expenses (line 5 minus line 4) was multiplied by the induction factor (line 6) to determine the reduction in expenses due to induction. The initial expenses were reduced by this amount to determine the beginning expenses (line 8) for the new plan.

The increase in out-of-pocket expenses was reduced by the portion of the MSA contribution that was considered to be "insurance" by the insured. In the example, the insured considered half of the contributions to be insurance. The increase in out-of-pocket less the MSA offset (line (14) minus line (4)) was multiplied by the induction factor to determine the expenses under a combined high deductible/MSA plan.

# Comparison to Current Market

Part A of this section compares the premiums used earlier in the report with rates available in the current marketplace. Part B discusses the prototype MSAs offered by some employers today.

## Comparison of Results to Experience

Here, we compare the premiums from the model used in the body of the report with premiums for insurance products now being sold in the open market. When variations in the market are considered, the model yields premiums that are a close approximation of the actual premium rates of the various insurance companies.

### Individual Insurance Policy— Low Deductible

The only readily available data were from individual insurance policies. Table V-1 shows the features of a typical low-deductible individual major medical insurance policy. Premiums quoted by insurance companies are shown for three cities in Table V-2. Table V-3 then shows a reconciliation between a premium developed from the work group's dataset and the rates in Table V-2.

**Table V-1**  
Features of Low-Deductible Plan

Benefit	Description
Deductible	\$250
Coinsurance	80%
Maximum out-of-pocket	\$1,250
Prescription Drugs	Yes
Maternity	No
Inpatient Psychiatric	Limited
Managed Care	Preauthorization required to receive full benefits for some treatment

Source: American Academy of Actuaries

Note: This table shows a comparison of premiums from the American Academy of Actuaries model to premiums for policies sold to individuals.

**Table V-2**

Monthly Non-Smoker Premiums for Low-Deductible Plan, Based on Gender and Age, Set by Various Companies for Selected Cities

	Cincinnati	Dallas	Richmond	Average
<b>Male Age 27</b>				
Company #1	\$ 86	\$114	\$ 95	\$ 98
Company #2	89	106	83	93
Company #3	128	171	138	146
Average	101	130	105	112
<b>Female Age 27</b>				
Company #1	110	146	122	126
Company #2	123	146	111	127
Company #3	142	191	155	163
Average	125	161	129	138
<b>Male Age 42</b>				
Company #1	129	173	144	149
Company #2	139	166	125	143
Company #3	166	220	179	188
Average	145	186	149	160
<b>Female Age 42</b>				
Company #1	168	225	187	193
Company #2	176	210	155	180
Company #3	200	265	214	226
Average	181	233	185	200
<b>Male Age 57</b>				
Company #1	256	346	286	296
Company #2	297	354	255	302
Company #3	294	391	317	334
Average	282	364	286	311
<b>Female Age 57</b>				
Company #1	255	344	284	294
Company #2	278	332	240	283
Company #3	247	327	267	280
Average	260	334	264	286

Source: American Academy of Actuaries and survey of insurers

Note: Minimum deductible offered by Company #2 is \$500. Premiums are adjusted to \$250 deductible basis.

Table V-3 compares the premiums developed from the model to premiums being charged by insurers for a \$250 deductible plan with 20% copayment on the next \$5,000. The first line shows the premium derived for the age and sex shown for the plan. For example, the female, age 42, premium, based on the model, is \$2,476.

The premiums were adjusted for known differences between the group and individual insurance market:

- ▲ The individual market premiums were averaged from a representative sample of geographic areas; no adjustment was made for geographic variations in costs.

**Table V-3**  
**Rate Reconciliation—Low Deductible Plan**

1. Age	27	27	42	42	57	57
2. Sex	Male	Female	Male	Female	Male	Female
3. Benefits (Dataset B)	\$809	\$2,532	\$1,367	\$2,476	\$3,219	\$3,605
4. Geographic Area	1.00	1.00	1.00	1.00	1.00	1.00
5. Remove Maternity	1.00	.40	1.00	.70	1.00	1.00
6. Underwriting	1.00	1.00	.90	.90	.70	.70
7. Expense Load—%	1.40	1.40	1.40	1.40	1.40	1.40
8. Expense Load—\$	\$200	\$200	\$200	\$200	\$200	\$200
9. Calculated Annual Premium <sup>a</sup>	\$1,333	\$1,618	\$1,922	\$2,384	\$3,355	\$3,733
10. Market Annual Premium [12 times amount from Table V-2]	\$1,344	\$1,656	\$1,920	\$2,400	\$3,732	\$3,432
11. Percentage Difference	-1%	-2%	0%	-1%	-10%	+9%

Source: American Academy of Actuaries

<sup>a</sup>[(3) \* (4) \* (5) \* (6) \* (7) + (8)]

Note: This table shows a comparison of premiums from the American Academy of Actuaries model to premiums for policies sold to individuals.

▲ The estimated cost of maternity coverage was eliminated from the female rates, since the individual plans exclude maternity.

▲ The rates for the older ages were multiplied by an underwriting factor, reflecting the insurer's ability to exclude high-cost individuals.

▲ The expense loading was based on the experience of work group members.

The resulting premiums for products sold in the individual market were very close to the premiums calculated from the model used in this paper, after the adjustments for known differences. For example, the female, age 42, rate, after adjustment, was \$2,384, compared with the average market rate of \$2,400.

## Individual Insurance Policy— High Deductible

Tables V-4, V-5, and V-6 resemble the three tables above, except that they relate to a high-deductible policy. Table V-4 shows the features of a typical high-deductible individual major medical insurance policy. Premiums quoted by insurance companies are shown for three cities in Table V-5. Table V-6 then shows a reconciliation between a premium developed from the work group's dataset and the rates in Table V-5.

Table V-6 is similar to Table V-3, except that it shows a development of rates for the high-deductible policy and compares them with the market rates in Table V-5.

However, note that the analysis of the high-deductible plan differs in one important way from that for the low-deductible plan: The insurer offering high deductible plans in the current market anticipates that those selecting the plans will be

**Table V-4**  
**Plan Features—High Deductible Plan**

Benefit	Description
Deductible	\$2,500
Coinsurance	80%
Maximum Out-of-pocket	\$3,500
Prescription Drugs	Yes
Maternity	No
Inpatient Psychiatric	Limited
Managed Care	Preauthorization required to receive full benefits for some treatment

Source: American Academy of Actuaries

Note: This table shows a comparison of premiums from the American Academy of Actuaries model to premiums for policies sold to individuals.

healthier than average. Therefore, the benefit costs (cf. Table V-6 line 3) can be set substantially lower than average and still be adequate to cover costs. For example, the assumption of selection by healthier individuals reduced the female age 42 expected benefit cost from \$2,476 to \$1,154.

The difference between the calculated premium and the premium for plans sold in the individual insurance market was greater than for the low-deductible plan. For example, the calculated premium for a female age 42 of \$1,191 was 7% lower than the market premium of \$1,284. This difference probably came about because the selection effect used in the table was greater than the actual selection in the individual insurance market.

**Table V-5**  
**Monthly Non-Smoker Premiums for High-Deductible Plan,**  
**Based on Gender and Age, Set by Various Companies**  
**for Selected Cities**

	Cincinnati	Dallas	Richmond	Average
Male age 27				
Company #1	\$38	\$49	\$41	\$43
Company #2	49	59	46	51
Company #3	46	60	49	52
Average	44	56	45	49
Female Age 27				
Company #1	47	61	52	53
Company #1	67	80	60	69
Company #1	52	68	56	59
Average	55	70	56	60
Male Age 42				
Company #1	65	85	71	74
Company #2	85	101	75	87
Company #3	83	106	90	93
Average	78	97	79	85
Female Age 42				
Company #1	83	110	92	95
Company #2	108	129	94	110
Company #3	103	134	113	117
Average	98	124	100	107
Male Age 57				
Company #1	133	179	148	153
Company #2	191	227	163	194
Company #3	174	228	189	197
Average	166	211	167	181
Female Age 57				
Company #1	126	169	141	145
Company #2	181	216	155	184
Company #3	172	225	189	195
Average	160	203	162	175

Source: American Academy of Actuaries

Note: Minimum deductible offered by Company #2 is \$500. Premiums are adjusted to \$250 deductible basis.

**Table V-6**  
**Rate Reconciliation—High-Deductible Plan**

1. Age	27	27	42	42	57	57
2. Sex	Male	Female	Male	Female	Male	Female
3. Benefits (Work Group Dataset)	\$308	\$1,157	\$574	\$1,154	\$1,608	\$1,878
4. Geographic Area	1.00	1.00	1.00	1.00	1.00	1.00
5. Remove Maternity	1.00	.35	1.00	.70	1.00	1.00
6. Underwriting	1.00	1.00	.90	.90	.70	.70
7. Expense Load—%	1.50	1.50	1.50	1.50	1.50	1.50
8. Expense Load—\$	\$100	\$100	\$100	\$100	\$100	\$100
9. Calculated Annual Premium <sup>a</sup>	\$562	\$707	\$875	\$1,191	\$1,788	\$2,072
10. Market Annual Premium [12 times amount from Table V-5]	\$588	\$720	\$1,020	\$1,284	\$2,172	\$2,100
11. Percentage Difference	-4%	-2%	-14%	-7%	-18%	-1%

Source: American Academy of Actuaries

<sup>a</sup>[(3) \* (4) \* (5) \* (6) \* (7) + (8)]

Note: This table shows a comparison of premiums from the American Academy of Actuaries model to premiums for policies sold to individuals.

## Employer-Based Arrangements Resembling MSAs

While MSAs like the ones described above can not be implemented under current tax law, several employers have implemented plans that are, conceptually, quite similar to those MSA plans. The sponsors believe that the plans have met their goals. However, the work group did not have access to the detailed information needed to compare the results of these plans with the models used in this report. The information that was provided about these MSA-type plans is presented at the end of this section.

Although there is not yet sufficient experience to determine the financial success of these programs, early indications seem favorable. In addition, the plans seem to be popular. Two, in particular, have received significant attention—those of *Forbes* and Dominion Resources.

### Forbes

At *Forbes* magazine, medical claims increased steadily, in the range of 10% to 30% annually, from the mid-1980s through the early 1990s. By 1992, *Forbes* was paying almost \$5,000 per employee each year for health insurance. Even though employee contributions reduced the employer's expense, *Forbes* managers felt that there was not a sufficiently strong incentive to make employees cost conscious. *Forbes* developed a plan to give employees a bonus for not filing medical and dental claims.

In December 1991, *Forbes* announced that employees would have an opportunity to earn up to \$1,000 of additional after-tax income. Specifically, if an employee filed medical and dental claims totaling less than \$500, *Forbes* would pay that person twice the difference between what was filed and \$500. *Forbes* would also pay whatever taxes the employee owed on the bonus.

## Dominion Resources

For example, if an employee had \$800 of medical expenses and filed claims for them, the insurance would reimburse that amount, less the deductible and coinsurance. The employee would be out of pocket a few hundred dollars and, since the claims filed were more than \$500, there would be no bonus from *Forbes*. However, if the employee filed no claims for those expenses, the bonus from *Forbes* would be \$1,000, plus the tax liability on the \$1,000, based on the employee's tax bracket.

So, if the employee had actually spent \$800 for medical expenses, he would have profited by about \$200 by not filing claims. On the other hand, it is possible that the employee would have spent less than the \$800 (consumed fewer medical services) in order to increase his profit.

In the first year of the plan, claims per person were 23% lower than the year before. Aggregate medical claims in 1991 of \$1,428,000 dropped to \$1,042,000 in 1992. In addition to savings in claims dollars, there was a 1992 savings in administrative expense—approximately \$30,000, because of less paperwork. In 1992, *Forbes* paid about \$125,000 in bonuses, significantly less than the savings in benefits and administrative expenses.

For 1993, the magazine expanded the bonus program by increasing the \$500 threshold to \$600. Results from 1993 are not yet available.

Dominion Resources, a public utility holding company in Richmond, Virginia, provided employees with incentives to choose high-deductible plans. For 1992, it offered three health plans, with deductibles ranging from \$200 to \$1,500 for individuals and from \$600 to \$3,000 for a family. Dominion contributed the same amount toward each employee's health premium, regardless of the plan selected. For those employees who choose the low and middle-deductible plans, an extra premium is required, which is paid by the employee. For the high-deductible plan, however, the company contribution exceeds the premium cost; the excess becomes cash available to the employee. Dominion even developed a plan wherein the money saved on premiums can be deposited in a personal savings account automatically. This is very similar to an MSA, except that the savings account has no tax advantage. Over a three-year period, Dominion's health care costs have risen by less than 1%.

Besides the premium incentives for choosing high-deductible plans, Dominion provided an additional incentive to employees. Dominion sets a budget for health care costs. If total costs come in below budget, Dominion shares the savings with those employees whose medical claims were less than that employee's deductible. At the end of 1992, the plan's first year, costs were 31% under budget; each "low-claims" employee received a check for \$794.

# Conclusion

**I**ncreases in copayments will result in savings in the cost of health care as individuals become more involved in the financial aspects of the choice of the type and level of health care. The MSA funds may offset some or all of the savings depending on the extent to which the individual views the funds as insurance rather than savings.

If the employer decides to maintain the current level of expenditure for the combined MSA/high deductible plan, then the savings will pass through to the employee. Since the increase in copayments is smaller than the premium reduction, some employees will have to pay more for health

care than under the current program. The greatest savings will be for the employees who have little or no health care expenditures. The greatest losses will be for the employees with substantial health care expenditures. Those with high expenditures are primarily older employees and pregnant women.

Achieving maximum savings from MSAs will require careful design of the law enabling the establishment of MSAs. Savings will also depend heavily on the individual actions taken by employers in redesigning their health plans around an MSA.

# TECHNICAL APPENDIX

*This appendix contains a detailed description of the datasets considered by the American Academy of Actuaries Medical Savings Accounts Work Group.*

## Society of Actuaries Survey

In 1992, the Society of Actuaries (SoA) conducted a survey of charges from seven insurers. The survey was completed in November 1994; the results have not yet been published.

The SoA survey is based on 1992 charges from seven insurers with a combined total of 3,524,000 lives. Many insurers have no specific record of covered individuals who do not file a claim. In these situations, the number of covered lives with no claim was estimated. All but 7% of the charges submitted were from people under age 65. Each person (subscriber, spouse or child) was treated as one charge unit. The study presented charges grouped into bands. The average incurred charge in 1992 was \$1,491 per individual. No administrative expenses were included. The typical plan features are shown in Table A-1.

## National Medical Expenditure Survey

The National Medical Expenditure Survey (NMES), conducted by the Agency for Health Care Policy and Research, is a survey of medical charges in 1987. The household survey was based on a stratified, multistage area probability sample, comprising about 35,000 people in 14,000 households.

NMES was designed to study public policy issues. Accordingly, there was an over sampling of units covered by Medicaid or with no health insurance coverage. Each unit was assigned a weight to model the general population. Feldstein and Gruber, in "A Major Risk Approach to Health Insurance Reform," built a distribution of charges from NMES as part of their analysis of the private insured market. Accordingly, they extracted only family units in which all members were covered

**Table A-1**  
Typical Plan Features—Society of Actuaries Survey

Plan Feature	Typical Feature
Deductible	\$200–\$250
General Coinsurance	80%
Hospital Deductible\$200 Hospital Deductible or General Deductible	
Hospital Coinsurance	80%
Maximum Out-of-Pocket	\$1,500 –\$5,000
Inpatient Psychiatric Limit	30–60 days
Outpatient Psychiatric Coinsurance	50%–80%
Prescription Drug Copayment	\$5–\$10

Source: Unpublished Society of Actuaries 1992 Indemnity Plan Medical Expense Survey

**Table A-2**  
Typical Plan Features—Dataset A

Plan Feature	Typical Feature
Deductible	\$250
General Coinsurance	75%
Hospital Deductible per Admission	\$100
Hospital Coinsurance	100%
Maximum Out-of-Pocket	\$2,500
Inpatient Psychiatric Limit	\$50,000 maximum benefit
Outpatient Psychiatric Coinsurance	65%
Prescription Drug Coinsurance	75%

Source: American Academy of Actuaries

by a private group insurance policy; they also restricted the group to those under 65. The result was 6,000 family units. NMES weights were used to model the entire population. They included only physician and hospital expenses; no administrative expenses were included. Finally, they trended the results from 1987 to 1995, using the growth rate in per capita personal health care expenditures on doctors and hospitals that had been projected by the Congressional Budget Office. The result was an average weighted cost of \$3,985 per family.

## Dataset A

Dataset A is comprised of a set of factors used to calculate the effects of differing deductible and maximum out-of-pocket limits on premiums. The table was based on charges from a large employed population in 1991. The organization aged the factors to 1992, so the distribution appears in the same dollars as the SoA study. The plan provisions are shown in Table A-2.

## Dataset B

(Referred to as the work group's dataset in the full report)

Dataset B is comprised of a set of tables used by a large organization to calculate premiums for large groups of over 100 lives, with no underwriting or provider discounts (for fee-for-service plans only). The data includes out-of-pocket expenditures to insured individuals. No administrative costs are included. Plans had annual maximum out-of-pocket limits of \$1,500 per individual or less. The data were provided in seven categories that varied by age and sex. They are male 20 to 35, male age 35 to 50, male age 50 to 65, female 20 to 35, female age 35 to 50, female age 50 to 65 and children. No data for the over-age-65 population was provided.

# Comparison of NMES to SoA

## Differences in Datasets

There are significant differences between the SoA results and the NMES dataset used in this comparison. The SoA data were adjusted to approximate the differences attributable to two of these factors: the differences in collection periods and discrepancies in the definition of “insured unit.” These adjustments are discussed in the next section, while major differences that were not adjusted for are discussed below.

Both the NMES dataset used for this comparison and SoA surveys are of insured lives. Therefore, they both exclude some individuals who were selected out through underwriting. However, the SoA survey would not include some charges that would not be submitted to insurers because of preexisting-condition limitations. We did not adjust for this difference.

The SoA survey would not include small charges that did not meet the deductibles or the portion of large charges that exceeded benefit limits. We did not adjust for this difference.

There was not enough information to determine whether there was a significant difference in demographics between the two surveys. We made no adjustment for demographic differences.

The SoA survey includes people who were insured for a partial year. These people were counted as fractions based on the portion of the year covered. Thus, three individuals with four months of charges each would have been treated as one year of exposure. This is probably consistent with NMES, and thus is not a significant factor.

Most likely there is a significant difference in the expenses covered in the two surveys. The Feldstein and Gruber tables state that they adjusted the NMES study to include only physician and hospital expenses. This adjustment probably removed most expenses that are not normally covered by insurance policies. However, the adjustment would also have excluded some expenses that would normally be insured.

## Adjustment for Date

The SoA charges were increased 9% for 1992 to 1993; 6% for 1993 to 1994; and 8% for 1994 to 1995: the trends are based on the Hay/Huggins Benefits Report (HHBR) from 1992 to 1994. Therefore, a \$10,000 SoA 1992 charge was increased to \$12,500 ( $10,000 \times 1.25$ ) in 1995 dollars.

## Adjustment for Insurance Unit

The Feldstein and Gruber data pertained to “family units,” which included individuals living alone as well as families of two or more. The SoA data were for insured individuals, including children as well as subscribers and spouses. The SoA data were adjusted to the family-unit basis by the following steps:

▲ The SoA data were converted to per adult charges by increasing the charges by 11%.

▲ A “two-adult” family was constructed from the per-adult charges data.

The Current Population Survey (CPS) was used to determine the split of the insured population between adults and children. The CPS is a survey designed to supplement and update the full census that is conducted once every ten years. A sample of the population is selected. One set of questions concerns health insurance status.

The data from NMES indicate that, for health care, the average child costs approximately 58% of what an average insured adult costs. Table A-3 derives the ratio of cost between adults only and a typical adult/child mix, based on the CPS and NMES data.

Table A-3  
Adult/Child Cost Ratio

Category	Population	Weight	Product
Adults	109,729,000	1.00	109,729,000
Children	35,655,000	.58	20,679,900
Total	145,384,000		130,408,900
Ratio of Population to Product			1.11

Source: American Academy of Actuaries

We raised the cost of the SoA charges, to account for the 11% increase in cost needed to switch from a per-person to a per-adult cost basis. Therefore the \$12,500 charges noted above would be increased to \$13,875 ( $12,500 \times 1.11$ ) to convert to an adult-only distribution.

CPS reports the number of individual insurance policies and the number of family policies. The HHBR survey average-family premium is 2.6 times the cost for an individual policy. The weighted cost of an insurance unit, based on CPS and HHBR, is derived in Table A-4.

This analysis showed that the average family unit from NMES could be approximately represented by two adults. We

Table A-4  
Individual/Family Costs

	Number	Weight	Product
Individual Policy	30,400,000	1.00	30,400,000
Family Policy	43,124,000	2.60	112,122,400
Total	73,524,000	1.94	142,522,400

Source: American Academy of Actuaries

assumed that the charges for the two adults would be independent, although there is evidence that there is some dependence between the medical charges of members of a family. Assuming dependence would somewhat increase the percentage of costs in the higher-charge range and in addition increase the percentage of families with no charges. The total average cost for the family unit would stay the same.

## Results—SoA vs NMES

These steps were performed on the SoA 1992 distributions. The bands were set in \$500 increments to \$5,000, \$1,000 increments to \$10,000, and \$5,000 increments to \$25,000. Nearly 40% (38.9%) of NMES families and 38.7% of SoA families had charges under \$500, whereas 2.7% of NMES and 2.6% SoA families had charges over \$25,000.

The 2.7% of NMES families with charges over \$25,000 had 35.7% of the total charges, and 2.5% of SoA families with charges over \$25,000 had 38.3% of the charges. The translation of SoA from an individual to insurance unit distribution resulted in some discontinuity. For example, the \$4,000 to \$4,500 band has far less charges than the \$3,500 to \$4,000 or the \$4,500 to \$5,000 band.

Comparisons in this report band data reported by the datasets. Distortions in such an analysis can arise from two sources. First, the dataset will report a limited number of representative charges. Second, the ranges of the bands are arbitrarily selected. The combination of these factors can result in some discontinuities, especially for the lower bands.

## Comparison of Dataset A to SoA

### Differences in Datasets

The SoA study includes only the effect of changes in copayments within a relatively narrow band, so induction did not have a significant effect on either body of data. Similarly, under-reporting of cases that did not reach the deductible, or that exceeded limits, probably did not differ significantly in the two datasets.

There was no attempt to identify or adjust for any demographic differences. Also, the larger- insurer data were not affected by underwriting or preexisting-condition limitations.

A key difference here relates to the opportunity for selection of a particular plan. Dataset A was obtained from one of many plans offered to employees in the dataset. Less expensive and less comprehensive plans were offered, and more comprehensive and more expensive plans were offered as well. Employees who anticipated major expenses would tend to select the more expensive plan; those who expected no (or few) expenses would tend to select the more economical plan.

## Adjustments

Since the data were for the same year as the SoA study, the only adjustment needed was to calibrate the bands. This was done by interpolating results. For example, insurer A's continuation table reported values for \$200 and \$300. The average of these two values was used for a \$250 value.

## Results—SoA vs Dataset A

The graph and chart show the percentage of total expense in the bands. SoA shows a greater percentage of the expenses than Dataset A in bands of \$10,000 or greater. The effect is the most pronounced in the over-\$25,000 band, for which SoA shows more than twice Dataset A's percentage of expenses. The converse is true for the lower bands. Dataset A has 7% of the expenses for charges less than \$500 compared to only 2% for SoA.

Dataset A has a lower percentage of medical expenses in the higher bands. Presumably, many of those with high expenses selected the more generous plans. There probably would be fewer people with no charges, since they would have selected the less expensive plan. Since Dataset A did not include percentages of charges within bands, we could not quantify this effect.

## Comparison of Dataset B to SoA

### Differences in Datasets

Dataset B is confined to fee-for-service plans, with large groups of over 100 lives. The SoA study included data from preferred provider organization plans, as well as some data for smaller groups. No adjustments were made for these differences. Both SoA and Dataset B were for 1992 charges, with no administrative expenses. The company that developed Dataset B compared the results with NMES and found that they were consistent.

The SoA survey included the 7.3% of the population that was over 65. Dataset B was confined to the 65-or-under population. No adjustment was made for the over-age population in SoA.

## Adjustments

The continuation tables for Dataset B were supplied in seven groups. These groups were aggregated into one continuance table, based on the demographics in the SoA survey. This was done in two steps. First, Dataset B's six continuance tables for adults were combined based on the SoA survey adult demographic mix. The adult weights were as shown in Table A-5. Second, this adult continuation table was blended with Dataset B's distribution for children.

**Table A-5**  
**Society of Actuaries Survey—Demographic Mix**

Age	Male	Female
20–34	.1230	.1343
35–49	.2221	.2347
50–65	.1486	.1373

Source: *American Academy of Actuaries*

We assumed that the ratio of adults, to children was equal to that indicated by CPS. From CPS, we estimate that approximately 25% (35,655,000 out of 145,384,000) are children. Therefore, Dataset B's child distribution received a 25% weight, and its aggregated adult data received a 75% weight.

### Results—SoA vs Dataset B

Because of the bands selected, Dataset B has no charges for the \$2,000 to \$2,499 band. Conversely, the charges for the \$1,500 to \$1,999 are unusually high. As we mentioned previously, this is because of the representative charges selected by Dataset B and the bands selected. Both datasets show a large percentage of the charges in the lower bands, and a small number of charges in the higher bands. The converse is true for the percentage of expenses. Both datasets show that over 30% of the expenses are for charges in excess of \$25,000; over 50% of the expenses are for charges over \$10,000. The datasets, in short, are very similar.

## Analysis

Both SoA and NMES show that 39% of the charges were below \$500. At the other extreme, 2.6% of the SoA and 2.7% of the NMES charges total more than \$25,000. The average family charge for 1995 was \$4,138 based on SoA data and \$3,725 based on NMES data.

Dataset A does not include percentages of charges within bands. The percentage of expense within each band was reported. SoA has 2% of the expenses for charges under \$500, whereas Dataset A has 7% of the expense for charges under \$500. At the other extreme SoA has 31% of the expenses in the \$25,000-and-over band, compared with 13% for SoA. Dataset A did not report the average total charge.

SoA reports 26%, and Dataset B reports that 27% of charges in the band are between \$1 and \$250. At the over-\$25,000 band, SoA has 0.8% of the charges, compared with 1.1% for Dataset B. The average charge per individual was \$1,491 for SoA, versus \$1,833 for Dataset B.

SoA, NMES and Dataset B have distributions that are very similar. Dataset A has a far higher percentage of charges in the lower bands and a lower percentage of charges in the higher bands than the other datasets. The work group has identified some key differences between Dataset A and the other datasets that explain the disparity in the distributions.

# Glossary

*Many of the terms in this paper are technical or terms of art used in the insurance industry. Their specific meaning can vary even among practitioners. Therefore, the definitions in this glossary are those that apply to this paper; they may not be valid in other contexts.*

## **Administrative Expenses**

The expenses paid by the insurer other than payments for covered charges. These include the cost of determining and paying the payments, premium taxes, commissions, and overhead. Investment return on reserves is treated as a negative expense for purposes of this paper. Therefore, the total premium is payments plus administrative expenses.

## **Charges**

These are the charges for health care as submitted to an insurance company by or on behalf of the insured. These charges are then reviewed by the insurance company to remove charges for uncovered services such as cosmetic surgery or hospital days in excess of the plan limit. The copayment formulas are then applied to the covered charges to determine payments by the insurer.

## **Coinsurance**

The percentage of the covered charges paid by the plan after the deductible.

## **Copayments**

The amount of the covered charges paid by the insured individual. These include deductibles and coinsurance. The copayments can be limited by a maximum out-of-pocket provision.

## **Corridor**

The difference between the deductible and the total contributions of employers and employees to the Medical Savings Account.

## **Covered charges**

Charges as submitted, adjusted for services not covered.

## **Covered services**

Services that are covered by the health insurance plan as specified in the plan. They might exclude categories of services not covered by the plan (such as charges for cosmetic surgery), services in excess of specified limits (such as days in excess of a 60-day hospital limit), and services for pre-existing conditions.

## **Deductible**

The amount the insured individual must pay before the plan makes any payment.

## **Incurred expenses**

Incurred expenses are assigned to a period (usually a year or month) by the day in which the service began. All of the data in this paper were determined as incurred expenses.

## **Insurance**

The term "insurance" is used to cover all plans that provide health insurance in the United States. This includes self-insured employer plans, insured employer plans, and individual insurance contracts, but not government programs such as Medicare and Medicaid.

## **Maximum out-of-pocket**

The limit on the insured's copayments. The insurer pays all of the covered expenses after the insured has paid this amount out-of-pocket.

## **Payments**

Covered charges, minus the copayments by the insured.

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