HEALTH CARE TRENDS

Moderator: NANCY F. NELSON
Panelists: E. JAY COLDWELL
CHARLES S. FUHRER
CHARLES J. SHERFEY
ALLEN J. SORBO
Recorder: JACQULYNN ABDELLA NENTWIG

o   Effect of changes in medical practices and technology
o   Effect of cost shifting
o   Measurement and analysis
o   Employers' perspective

MS. NANCY F. NELSON: The increasing cost of health care is a concern for all of us, especially for health actuaries. It continues to receive widespread media attention. I have noticed two things that particularly illustrate this. First, there is a great deal of recognition of the 31 million Americans who have no health insurance. There are many programs being designed to help them, and the possibility of national health insurance is being discussed with increasing frequency. Second, there have been many articles indicating an increased employer concern over rising costs. This indicates to me that employers are rethinking issues of benefit design and their commitment to dependent coverage. In addition, liabilities for retiree medical expenses are a major concern for employers.

Our panelists are all health actuaries who have a broad range of experience. Each of them brings a different perspective to our discussion of health care trends.

Jay Coldwell is the head of the Group Actuarial Department at the Wausau Insurance Companies. He is responsible for HMO, PPO and traditional group life and health products. Previously he was an employee benefits consultant at Touche Ross. Jay will discuss techniques to measure and analyze trend.

Allen Sorbo is a consultant in the Minneapolis Tillinghast office. Al is an expert on actuarial issues relating to managed care, and he consults primarily with HMOs and PPOs. He will discuss trend from a managed care perspective.

Charles Sherfey is a principal with William M. Mercer Meidinger Hansen, Inc., in Chicago. He is an employee benefits consultant, and he will discuss retiree medical issues. He will also discuss problems analyzing medical expense trends versus overall increases in health care costs.

Charles Fuhrer is an actuary at the Health Care Service Corporation in Chicago, which is also known as Blue Cross/Blue Shield of Illinois. He is responsible for major group accounts. Mr. Fuhrer's paper entitled "Some Applications of Credibility Theory to Group Insurance" was published in *Transactions*, Volume XL. His paper "A Method for Calculating Aggregate Stop Loss Premium" won the 1988 AERF Practitioners Award and will be published in a future issue of *ARCH*.

MR. E. JAY COLDWELL: The definition of group health trend factor for insured programs that I will be using is the annual rate of change in medical care cost per insured member in a stationary population. This includes inflation in the cost per service, the change in the number of services provided, the change in mix of services provided and deductible leveraging. I assume the interaction among these four components is understood by health actuaries, and I will not elaborate further.

This trend factor is commonly used in an experience rating formula to project claims for a particular group. It is also used to set tabular rates for future rating periods, since tabular rates

are based on the past experience of an insurer. The group health trend factor is the most volatile and most important number that an insurer uses to project its premium rates.

My objectives are to present a method to analyze past medical trends and to discuss problems experienced by small- to medium-size insurers. These problems include the homogeneity of the data, the credibility of the data and volatility. I will also address difficulties involved with projecting future experience. A small insurer typically has problems getting data clean enough and detailed enough to analyze.

The method I am presenting has six steps. The first step is to determine the incurred claims for some large block of business, preferably by month, for a period of several years. This implies several things. It implies the company has a fairly large and stable block of business, and that claim coding permits matching of paid claims to dates of incurral, or at least the month of service. It also implies the company has a good reserve system to develop reasonable estimates of incurred claims in the most recent months, since those are the months in which we are most interested.

I will be presenting some actual data for one particular block of business. It has its own peculiarities and characteristics and is not applicable in general to other blocks of business. I am familiar with other blocks of business that have different trend patterns than the one I am presenting. The block of business is not intended to be representative.

The second step is to divide the incurred claims by the number of enrollees insured in a block of business. This implies that the company has good enrollment records and at least employee-dependent type counts. Enrollee counts would be even better and might be available for an HMO. This might be impossible for a typical small insurer where claims may be paid by several TPAs.

The graph in Exhibit 1 shows the results for this block of business on an incurred claims per-member-per-month basis for several years. The Y axis represents the dollars per member per month and the X axis represents time. The actual dollars per month are shown with diamonds, and a step function representing the average for each calendar year is shown with squares. This graphically illustrates where increases have occurred. Considering the quality of data usually available on group business, you might feel pretty good if you had been able to produce this analysis.
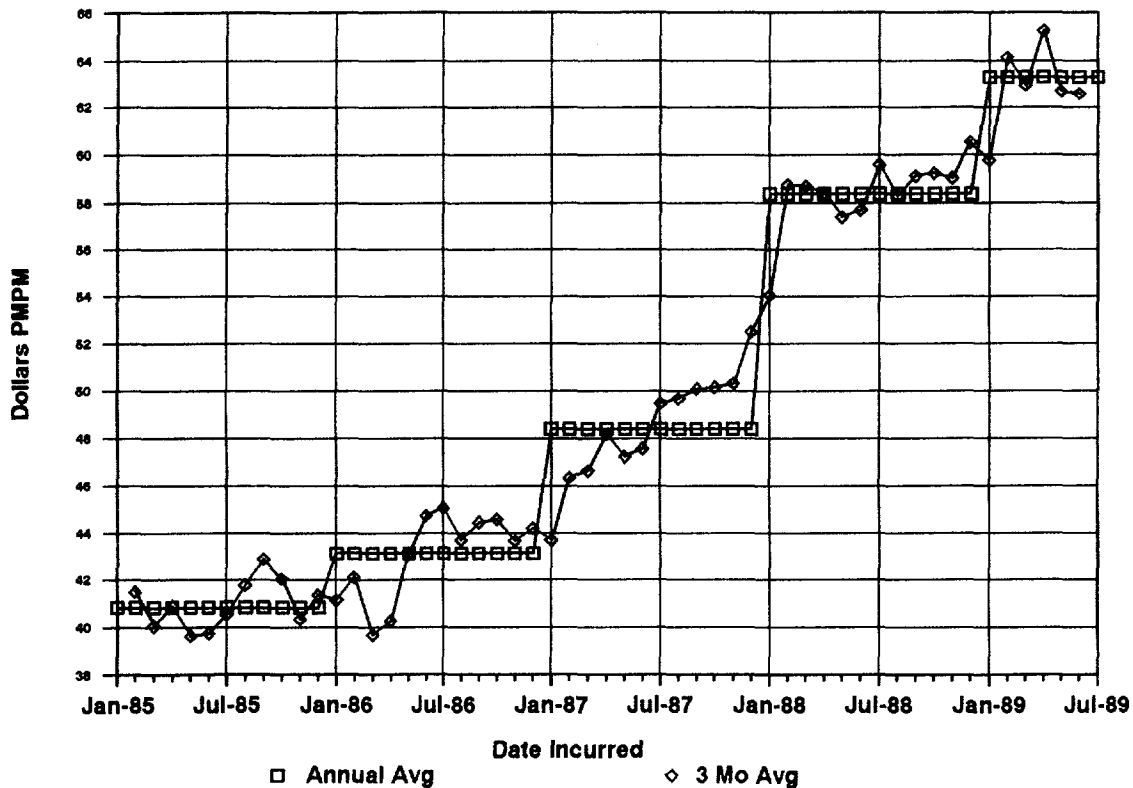
We should also consider other changes in the block of business that might influence incurred claims per member per month besides medical trend. (Remember our definition of medical trend is inflation, the number of services provided, mix of services and deductible leveraging.)

I have made a list of some factors that I think we can do a reasonable job of quantifying. There may be changes in benefit schedules over the period of time being studied; changes in deductibles and coinsurance; changes in the demographics of the group, such as the age of the group, sex, or the single/family mix; or changes in state mandated benefits. Adjustments to reflect these changes are necessary. The geography, the urban and rural mix, the mix of industries and the cost controls, such as pre-admission certification, may also have changed. Any provider fee schedule changes must be taken into account as something different from normal inflation. From this discussion, I think we can conclude the data from the first draft are not homogeneous. It is not a stationary population with respect to benefit schedules, demographics, geography and so on.
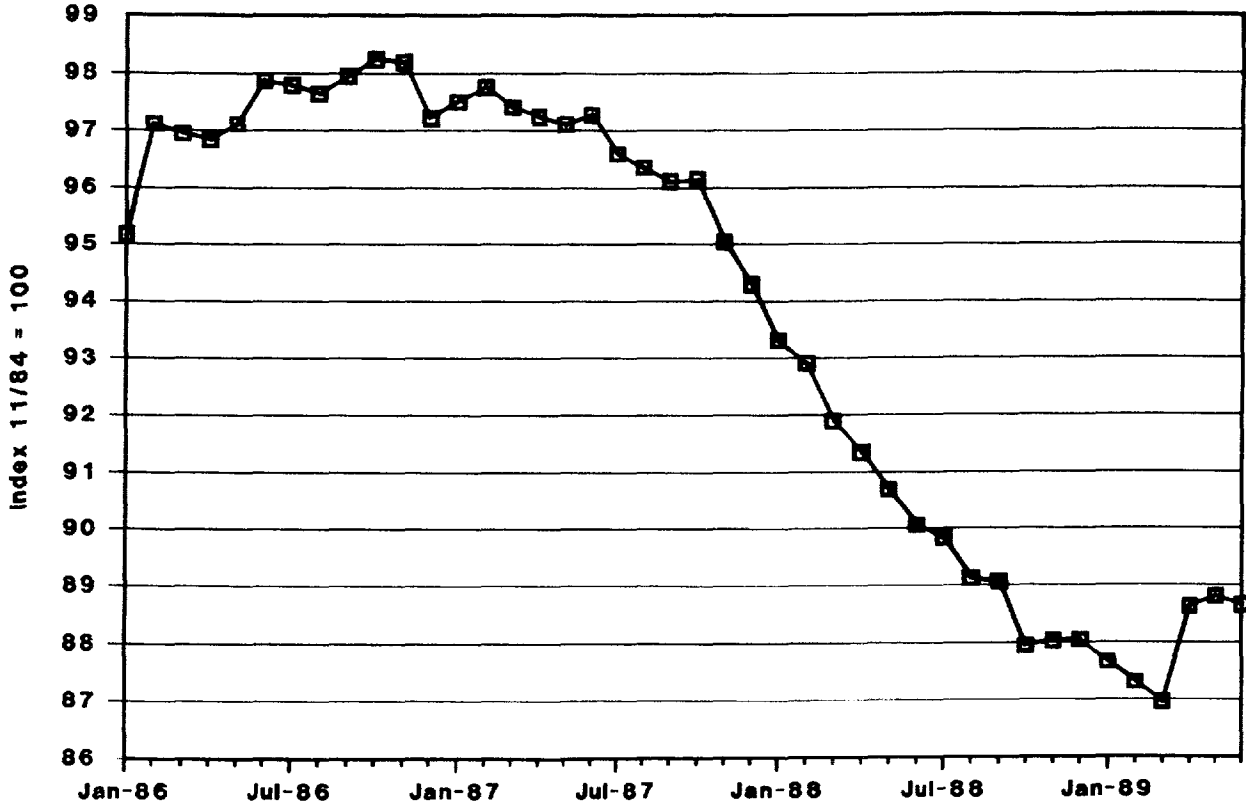
How do we measure those components to homogenize our data? How do we measure the effects of these quantifiable factors? The third step (and the key step) is to make benefit adjustments. To accomplish this, I have put together a benefit level index. This index measures the aggregate effects of these several components over various points in time. Exhibit 2 shows a graph of such an index. The index is arbitrarily set at 100 in 1984. The benefits on this block of business remained relatively constant until 1987 and then dropped fairly dramatically until about 1989.

How do we come up with an index of this sort? The obvious thing to do is to use your tabular rating system. This means we need to be able to calculate a tabular premium for each month of coverage on the block of business. This is kind of a brute force method, but a great deal of detail is needed. The tabular premium should adjust for each of the quantifiable factors that can be identified. This requires a good rating system. The tabular premium should be before trend adjustments so the tabular rate basis is common over time. With this information, this kind of an

Incurred Claims per Enrollee

Dollars PMPM

Date Incurred

□ Annual Avg   ◇ 3 Mo Avg

Benefit Level Index

Index 11/84 = 100

X-axis: Jan-86, Jul-86, Jan-87, Jul-87, Jan-88, Jul-88, Jan-89

Y-axis: 86 to 99

index curve may be drawn. As a side note, this implies any experience rating formula adjusts explicitly for each of those factors. If not, the experience rates may produce various results that do not reflect the current makeup of the group.

The fourth step is to actually homogenize the data by adjusting the per-member-per-month claims by this benefit level index.

The fifth step is to determine a trend rate by dividing each month's adjusted per-member-per-month cost by a value calculated one year prior. The graph in Exhibit 3 shows the trend rate on this particular block of business both unadjusted and adjusted for coverage changes. This exhibit illustrates the importance of doing the benefit adjustment correctly. This block of business showed a dramatic increase in trend from July 1987 to January 1988, which is made even more dramatic by the addition of the benefit adjustment. On a benefit adjustment basis, we increased the trend from about 11-29% in that six-month period. On an unadjusted basis, we increased from 9-23%. The jumps are big either way, but the benefit adjustment makes a significant change in the evaluation of the current situation.

The actual value of these numbers is likely to be higher than what your particular consultant has recommended as a theoretical trend, that is, one that is based on actual inflation and actual number of services that have been provided with the change in those numbers. What have we missed at this point?

There are other factors that we have not yet measured. I have come up with a short list of subjective factors: underwriting posture, antiselection, statistical fluctuation and marketing. I am sure that we could add more. These factors are difficult to measure with the rating system and fall in the realm of subjective adjustment. If your underwriting posture has changed, the trend rate may be affected.

One of the most important subjective factors is antiselection, especially with respect to HMO penetration on an indemnity block of business. One statistic that I like to cite is that roughly 2% of enrollees incur about 30% of claims. Obviously, if you have not structured your benefit package correctly with respect to the other players in a multiple choice situation, you will enroll the wrong 2%. By structure, I mean you should evaluate the position of your benefits, the employee/employer contribution, and access to care relative to the competition. This may fluctuate from time to time, producing some strange results in your trend analysis.

There can also be some dramatic statistical fluctuations. I am familiar with a block of business that looks very homogenous. It is all in one geographic area, has a very limited number of benefit options, and is roughly a $30 million block of business. In that particular block of business, we have found that the nonhospital trend over a period of several years has ranged from 10 to 14%. The hospital trend has varied pretty erratically. It has gone from 10% to 20% to -8%. So, there can be tremendous statistical variation.

Marketing-related uncertainty may also be a concern. The marketing people are always changing things and coming up with variations in new business production. The lapse rates change, thereby changing the degree that the block of business has some select characteristics. The group size distribution may also have changed, which changes the characteristics if you are moving to a larger-size group. There are not many good ways to quantify these factors.

At this point, we could sum this up and make one observation. It is difficult to know what incurred claims are in recent months because there is always some uncertainty in setting reserves, especially when you are trying to determine incurred claims by month. Combining this with the uncertainty of the various adjustments that are necessary, I think we have a very difficult time in knowing even where we have been in the recent past, much less where we are going in terms of trend in the future.

I would like to make a few comments on the volatility of trend. The graphs show a lot of volatility. Exhibit 4 shows a longer history on the same block of business. We see extremely volatile results in very short periods of time. Some of the explanations for volatility include an underlying volatility in medical cost. Providers seem to respond in unison to cost changes with changes in their own fee structure and billing structure and so on. A good example of this would be changes in Medicare cost shifting when the government arbitrarily chooses what it reimburses

TREND IN GROUP HEALTH PAYMENTS

12 months ending

□ Unadjusted   + Coverage Adjusted
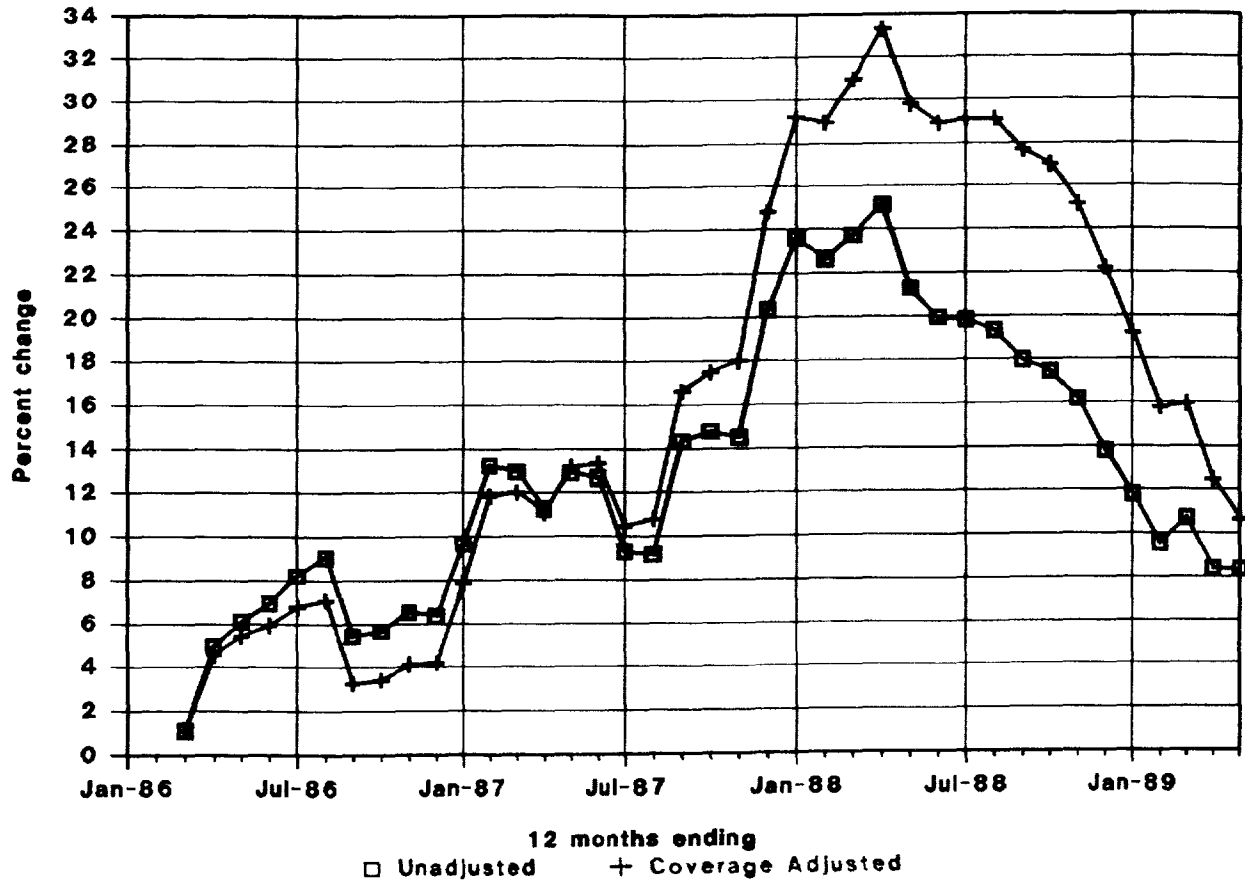
Observed Trend in Claim Costs vs.

CPI Medical Inflation
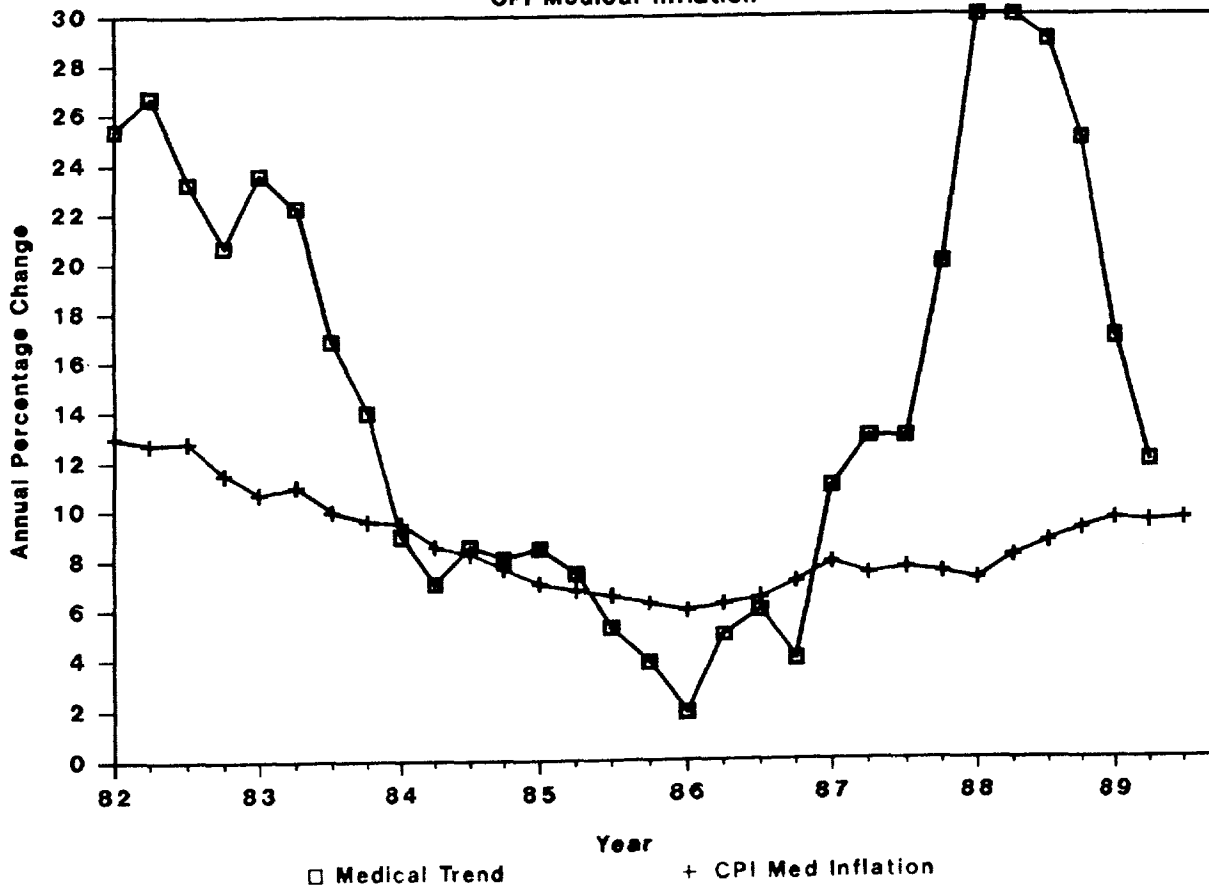
□ Medical Trend   + CPI Med Inflation

for Medicare. Exhibit 4 also compares the trend on this block of business with medical inflation, where medical inflation is the consumer price index (CPI) components weighted to an insurance company's distribution of charges. We can see some correlation there. In general, inflation tends to be higher when trend is higher and lower when trend is lower. If all we had to deal with was inflation, we would be in pretty good shape.

Some other explanations for the volatility include the impact of the Medicare Diagnostic Related Group (DRG) system and the resulting decline in the number of hospital days. Exhibit 5 illustrates the change in hospital days compared with the change in medical trend. In the early 1980s when the DRG system was instituted, the number of hospital days declined quite rapidly. This contributed to a decline in the rate of medical trend. As the number of days leveled off in 1986 and 1987, the downward pressure on the trend was released and the trend bounced back up. Exhibit 6 compares the data on inpatient days and outpatient visits. We can see somewhat of a leveraging effect here. As hospitals have found that they needed more revenue due to the decline in inpatient days, they have increased outpatient services. In late 1986 and 1987, the hospital days leveled off. We are not seeing a decline in hospital days, but outpatient visits are decreasing at a very healthy rate. Towards the end of 1988 and the first part of 1989, the inpatient days have dropped off again and outpatient days are not increasing at quite so rapid a rate. This is reflected in the trend analysis on this block of business. These numbers back up the anecdotes that we have heard over the last couple of years.

I can mention a couple of other items that influence volatility. Statistical fluctuation again is a big item. On the block of business I mentioned earlier that had $30 million in one geographic area, one year we saw a per-member-per-month increase of 20%, and the next year it declined by 1%. I think what happened is that we probably added a statistical fluctuation in one direction that ended up with an overstatement of what the cost was in one year. The next year the fluctuation was in the downward direction. The resulting trend, when you divided the two, was below the actual underlying force.

Any subjective factors that a company introduces can affect the volatility. Adverse selection can add considerably to the volatility. Account turnover can be a problem. For example, if you have some large accounts enter or leave that your rating system cannot adequately adjust for, then you may be introducing items not reflected in the benefit index and the data may be less homogeneous than you realize. Large claim frequency is another factor. You may want to take out claims over $50,000, for example, and just study the smaller claims and see if that looks less volatile.

A few comments on considerations in projecting future experience. We can tell from one of the previous graphs that if we pick the current rate of trend as our projection, we are always going to be wrong -- at least on this book of business. It is never the same 12 months from now as it is today. What does this imply for picking a trend factor for pricing business? You might think that we have some cycles going on here, and that is probably true. There probably is some cyclical nature. The key is to determine where you are in the cycle, and then you might at least know the slope of the future direction of the change. You would know whether to pick something lower or higher than your current experience. This assumes that future cycles are the same as the past behavior, which is probably similar to reading your horoscope in the paper.

You should also account for objective activities your company undertakes such as changes in marketing, underwriting, claim processing, and so on. You need to look at outside information, what Medicare is doing, and hospital profitability. Exhibit 7 illustrates this. The top line is the change in hospital expense. The middle line shows the change in the hospital market basket. Hospital expense generally increases at a higher rate than the prices of things they pick.
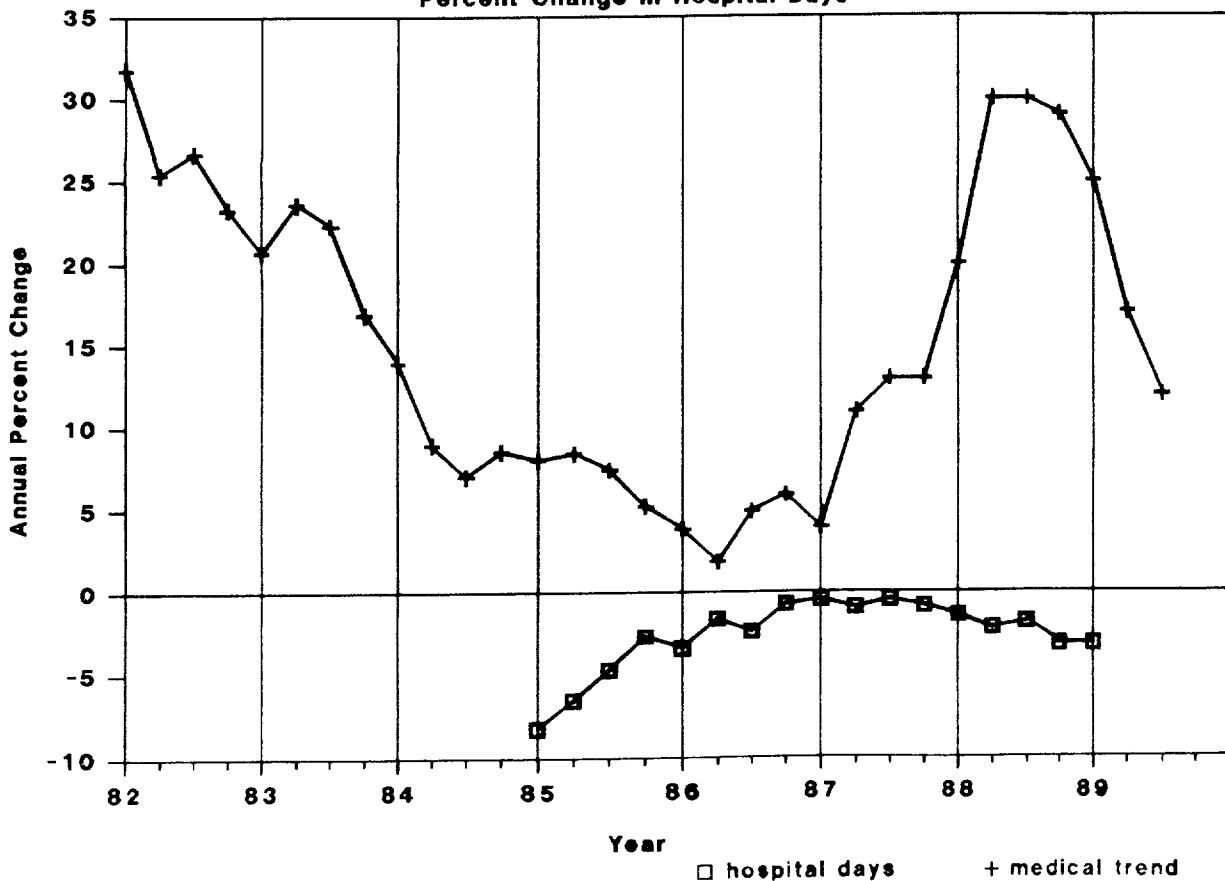
The bottom line shows the patient margin or the gross profit margin of the hospitals. Hospitals were doing pretty well in 1985 and 1986, and profit margins started to decline in 1987. In early 1988, hospitals realized they had some serious problems profit wise, and that always calls for an increase in trend. Although the availability of these data is somewhat delayed, we probably get it almost as soon as the hospital industry does. You can anticipate a little bit from these kinds of data.

Looking for correlations with other economic indexes, we look at the industrial production index produced by the Federal Reserve Board, since it has some validity as a leading indicator. It
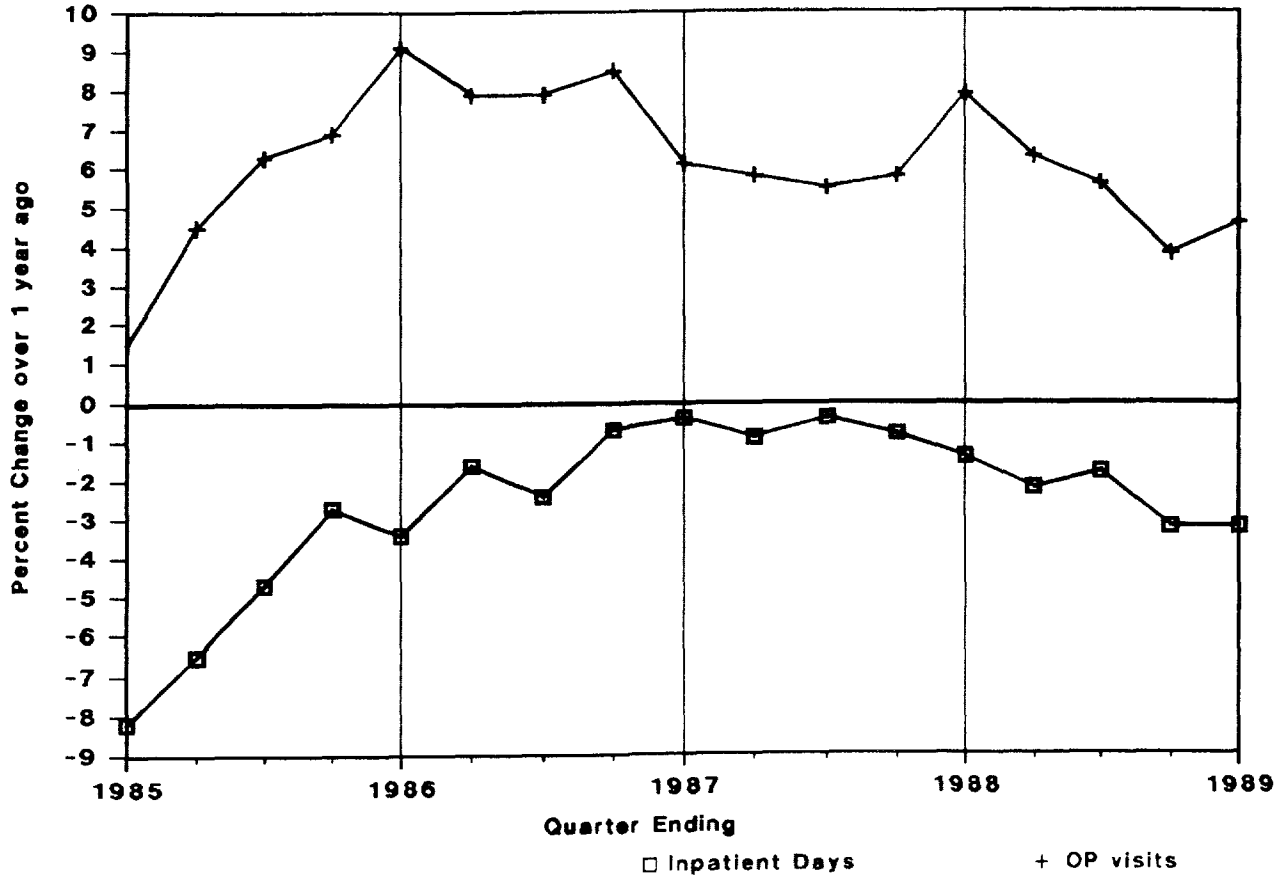
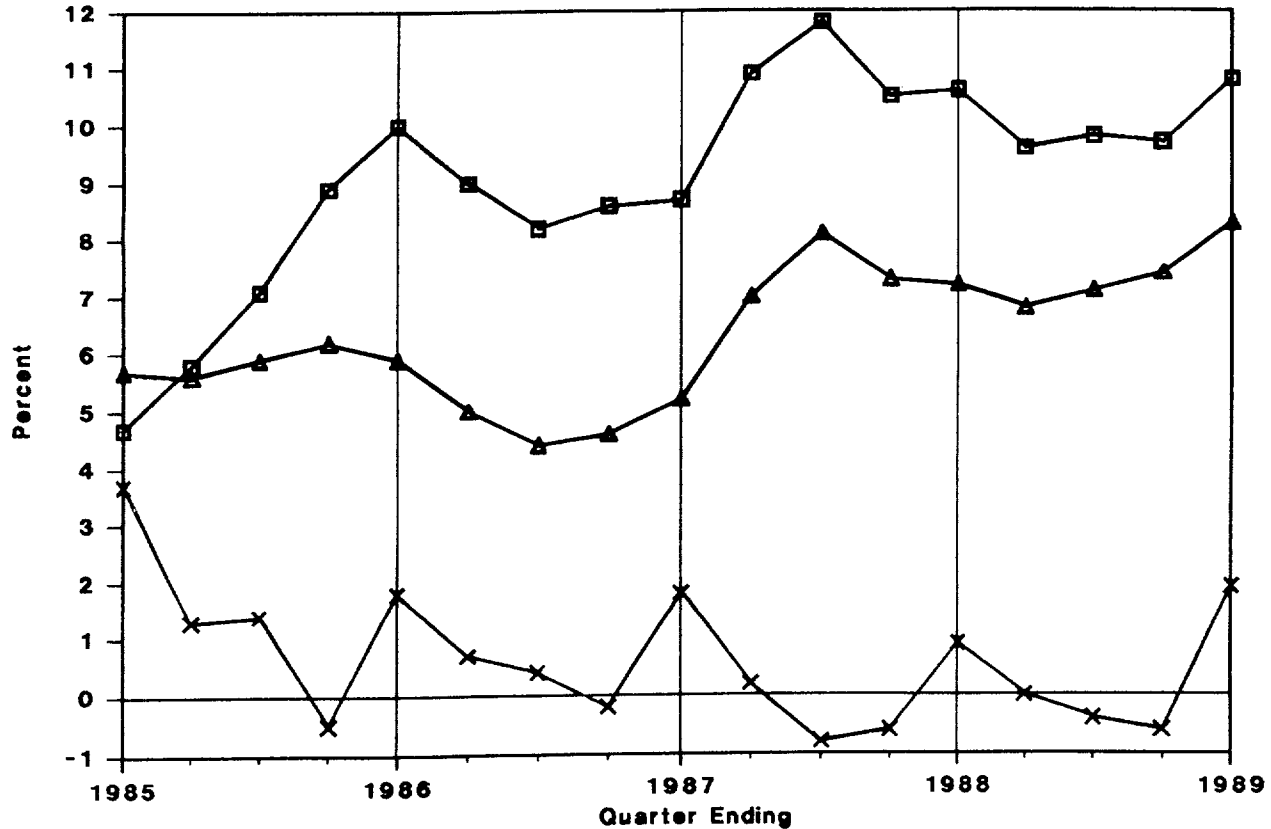# Observed Trend in Claim Costs and

Percent Change in Hospital Days

Change in Hospital Utilization

Chart: Percent Change over 1 year ago (y-axis) vs. Quarter Ending (x-axis), 1985–1989.

Legend: □ Inpatient Days   + OP visits

Hospital Industry Financial Data

Quarter Ending

□ Change in Hospital Expense   △ Change in Hospital Market Basket   ✕ Patient Margin

represents the change in industrial output and may be an indication of the financial health of the policyholder and their employees. It also reflects the hours that employees are working, their wages and hiring practices. Exhibit 8 is a comparison of trend on the sample block of business with the change in the industrial production index. The block of business is primarily a manufacturing business, so it makes some sense. Some remarkable correlation is evident, at least in terms of the second derivative (what direction the line is going) from 1984 until the end of 1987.

Exhibit 9 is the same comparison with the industrial production shifted back 12 months. There is a strong correlation from 1983 through 1987. Even in 1988, when the magnitudes are far apart, there is a point of inflection on the last line that seems to correspond with when the plan inflection occurred in this block of business. It may not tell you much about the magnitude, but it might tell you something about the direction that things are going.

In conclusion, we talked about a six-step method for measuring medical cost trend -- determining the monthly incurred claims, dividing by the number of enrollees to get a per member cost, developing a benefit level index, adjusting the per-member-per-month incurred claims by the benefit level index to homogenize the data, dividing by the previous year's per-member-per-month claims to get a trend, and finally adjusting for any subjective factors that you could come up with.

The second big topic is determining actual past trend. This is difficult since the data are not homogeneous, not credible, and tend to be too volatile unless you have large blocks of business that the small insurers typically do not work with. With the size of the sample book of business, it is subject to changes that are hard to quantify and distort the data. In projecting future trend, care and subjective judgment are needed. We should consider the volatility of trend, especially as compared with the profit margins on this type of business. We should consider that almost every activity taken by a group operation impacts the measured trend. Anything done in marketing, underwriting claims, utilization review, even the enrollment area, impacts what you finally measure. In addition, many outside forces impact trend -- medical providers, the government, HMOs, PPOs, the general rate of inflation, the financial health of your policyholders and employees, and so on.

MR. ALLEN J. SORBO: I will address the trends over the recent past and the current situation for HMOs. There are a lot of similarities between what Jay showed you on the cost trends in the insurance industry and HMOs. Many HMOs have probably had trends that are a few notches below that, and in some cases, many notches below that over the past several years. I would like to explain a little bit about the reasons why.

The HMO industry is emerging from the throes of the latest underwriting cycle, as is the insurance industry, with much higher hopes for the future. The last two years may go down as one of the darkest times during the adolescent period of the industry. This is led primarily by the bankruptcy declaration of Maxicare, which is still in the process of trying to work itself out of bankruptcy. There have been numerous other insolvencies in the industry. Some have been bailed out by other organizations, but many have been allowed to die a fairly slow death. Net losses were incurred by 75% of the individual practice associations (IPAs), 60% of group practice plans, and 50% of staff and network plans.

Will the industry emerge older and wiser from the dark aftermath of what I shall call the "go-go" years of merger and acquisition and "for profit" conversions? I think it will. At least the industry now understands that bigger is not necessarily better, and you cannot make it up in volume. Impetus is coming from the regulators to improve the financial strength of HMOs as well.

There are some disturbing signs that not all is well in the industry. There are a number of problems the HMOs are going to have to work through in the next few years. I will focus on recent trends that are presenting challenges to the industry. Let us first review some of the historical trends and reasons that HMOs have been able to generally experience lower cost trends and price increases than the insurance industry.

Clearly, the emphasis of the HMO industry for years has been in controlling inpatient use. I think it can be said quite positively and accurately at this point that HMOs have been successful in this endeavor. Recent statistics indicate that the average inpatient utilization rate for HMOs is hovering at around 350 days per thousand and has generally been in a downward trend

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Observed Trend in Claim Costs and
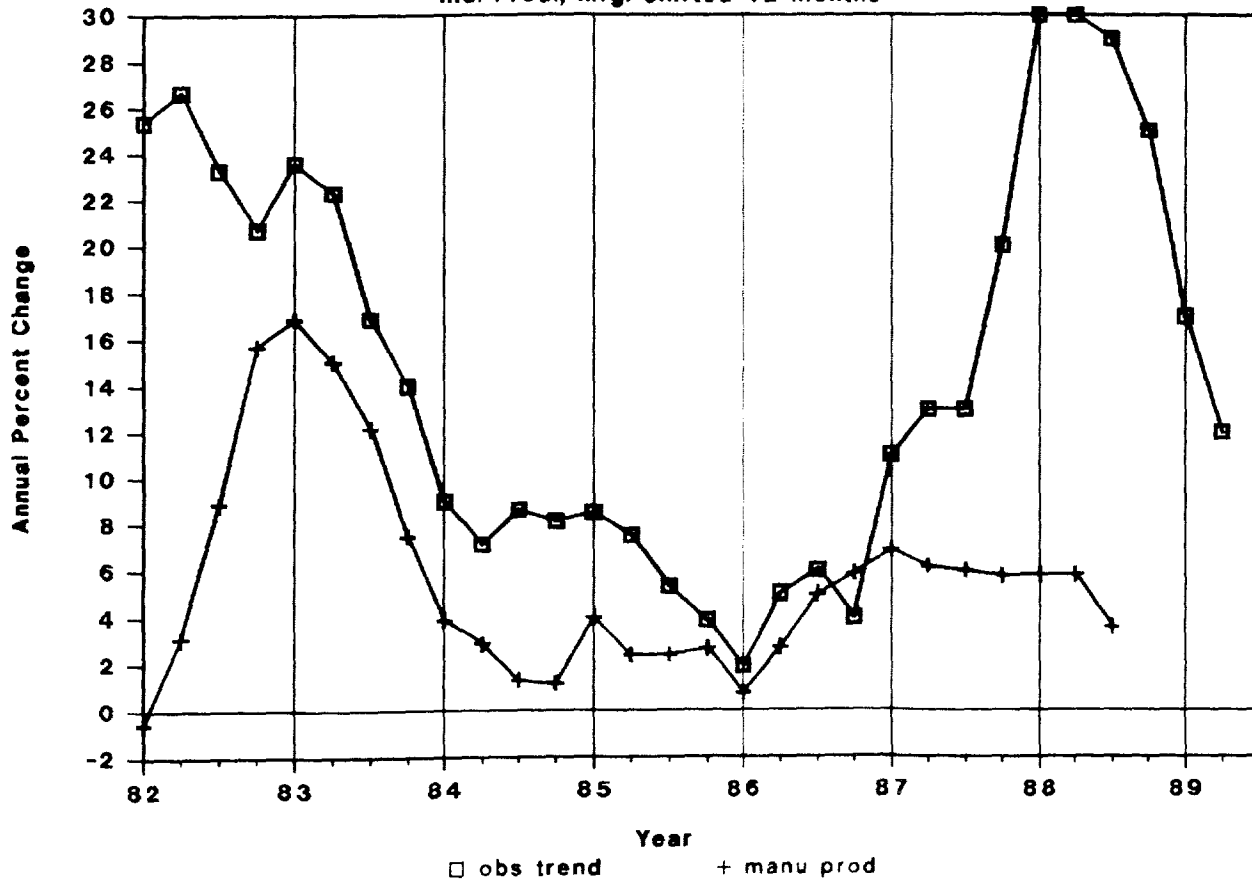

Industrial Production, Manufacturing
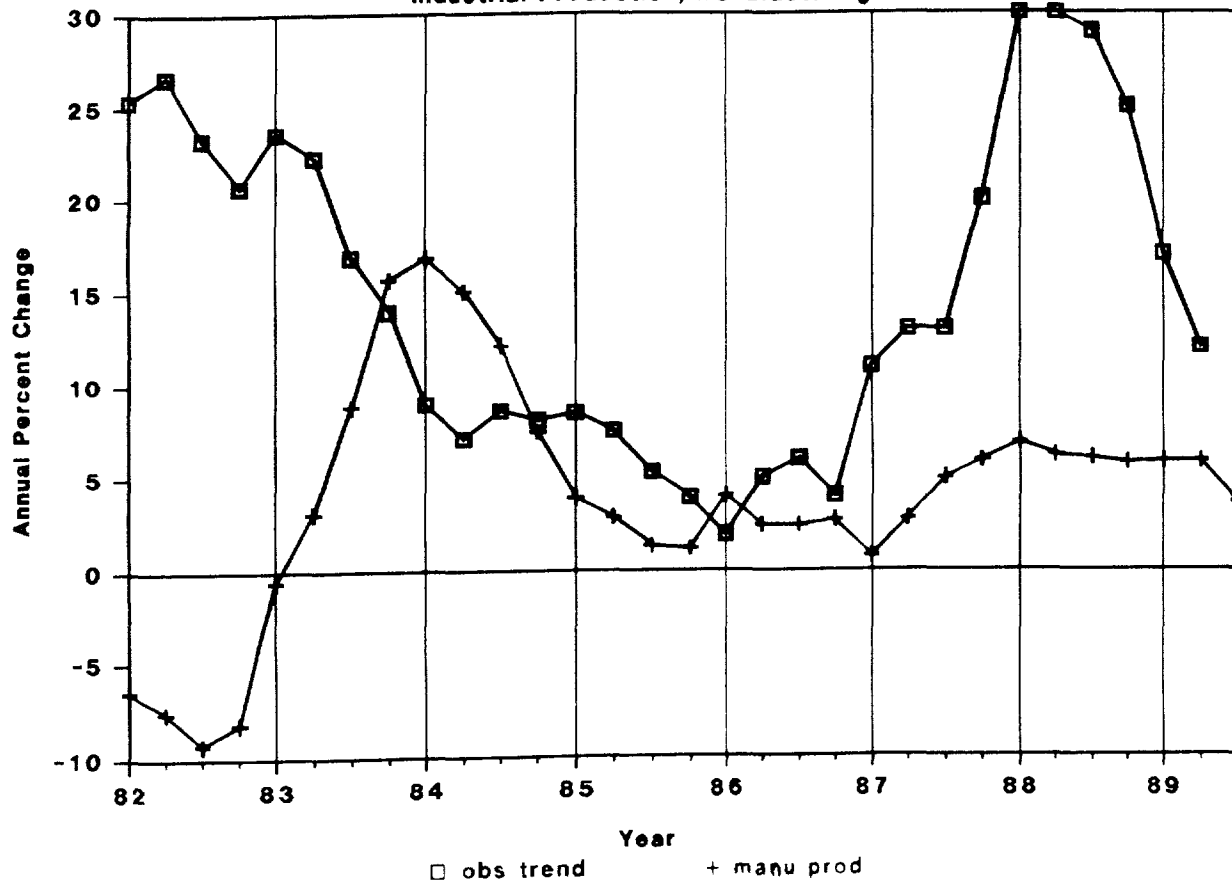
Observed Trend in Claim Costs and

Ind. Prod., Mfg. shifted 12 months

□ obs trend   + manu prod

throughout the 1980s. Favorable selection issues to the side, I think we can point out plans like the large Kaiser organization, which have been around for years and have had exceptional utilization results. Just by its size and the fact that an organization that large cannot be claimed to be selecting against the insurance industry because it has a large mature population of its own, it is clear that plans like that have had a major impact on utilization. The same can be said for other similar organizations. The downward trend over the past decade in HMO inpatient utilization has certainly had a dampening effect on the cost trends of HMOs.

A second point is the pattern of HMOs to take strong negotiating positions with their hospitals. This has led to what the industry has claimed is cost shifting on the insurance industry. The growth in the rate of increase in hospital costs incurred by HMOs has largely been on a flat, declining trend, as the HMO industry has grown, become stronger and been able to extract bigger discounts from their hospitals. In some cases, they have taken the stance of shrinking their hospital panels to extract even more favorable arrangements with the few hospitals they choose to do business with. In many cases, HMOs in recent years have been tying their hospitals to multiyear contracts of at least two and in some cases three years. In these contracts, the increases are tied to the CPI via the all-consumer CPI factor or the hospital index or some blend of the two.

A third area where HMOs have been extremely successful in controlling cost is physician services. I would emphasize the biggest success has been made by staff models and medical group practice plans through capitation arrangements with their physician groups. Medical group practice plans which capitate their groups, and, in some cases, network plans which capitate either mini-IPAs which are formed of hospital based physicians or smaller medical groups in their community, and also shift the responsibility for claims processing to those medical groups, are in a position where they have been able to negotiate very favorable increases on a year-to-year basis with those medical groups. The HMOs, in some cases, have no idea of what the actual experience has been for their provider groups. This is probably a dangerous signal for the future. I have some concern about the effect in the interim of these arrangements. As they are now constructed, the HMOs have been able to hold capitation increases to the medical groups and their IPA networks to below double digit rates for several years. Also, in some cases, they have been writing multiyear contracts stating the capitation increase in terms of the medical CPI or the physician's component, or the all urban index or some blend of those factors.

Another area where HMOs have been successful is in limiting their purchases for certain services to a few vendors. In this area, services that stand out are laboratory, mental health and drugs. However, in the drug area, the drug companies have lost money in recent years and have been backing out of capitation contracts per se.

I would also say that while HMOs have for years been a little bit lax in the underwriting of their business, this has been improving for most HMOs. In the process of improving their underwriting, they have had some favorable impacts on their trends. The HMO industry is also undergoing some major benefit redesign in response to what employers have been doing over the past few years. The general result of these efforts has been, in many cases, single digit price increases for some of the larger and more successful HMOs, at least on an average basis, over the past five or six years.

Lastly, I would say that the nature of HMOs and their approach to dealing with their providers clearly indicate the need to analyze cost trends in a very detailed basis.

Enough about the past, let us talk a little bit about the present and the very recent past. I would say most plans have clearly not exhausted the use of these proven approaches that I have just described. In some communities the hospitals and the physicians have created some significant political barriers. Gradually these barriers tend to erode, and the HMOs tend to get into place what they need to control their costs. Certainly this is true of more recent years when the HMOs have been undergoing some significant trend increases in cost due to lack of control. More often than not, that tends to be the major impetus to get things turned around quickly and to get the physicians to agree to tighter controls. The largest trend of the last couple years has been huge increases in ambulatory encounters and related ancillary services. As Jay showed in one of his exhibits, we see increases on the order of 5-10% per year in this area in utilization alone. What has been discouraging is that the HMOs, at this point, have been swallowing hard and not taking a good hard look as to what has been going on and trying to deal with it. I think that is bound to change soon.

PANEL DISCUSSION

Technology has certainly been another big factor, and I do not think the HMOs have figured out what to do about that any more than anyone else. At least most of the plans that we deal with haven't taken a good hard look at new technologies and figuring out what sort of controls they can put in place, if any, to limit their use for unnecessary services.

As I mentioned earlier, underwriting has been weak in many cases. This has certainly contributed to some of the adverse experience of some plans, but this should be consistent on an individual case basis. The results of these recent trends, as indicated by various sources and publications, is that price increases have clearly been an increasing trend for the HMO industry.

The average increase was around 7% during 1987, 13% during 1988, and up to 17% during 1989. During 1989, one publication indicated that fully 50% of all HMOs in the country were increasing rates between 10% and 20%, and most of the rest were probably above 20%. One draft, that was fairly interesting, showed the price increases on an average basis by state. Maine and New Hampshire stuck out clearly, with greater than 30% increases. Obviously, in certain areas there are some problems. Clearly the rate increases have generally been larger than the cost trends, at least recently, in order to play catch up, as you are subject to the guarantees with employers on a 12-month basis. The same is true of the HMOs. Another interesting fact is that one publication indicated that 32% of HMOs reported higher inpatient use during 1988 as being a major contributor to their higher cost and loss experience. Also, 50% indicated higher outpatient use as a major contributor. I would question that vehemently. I suspect it is much higher than that, but that just tells me that many plans don't really know. Actually, there is a fair percentage of Medicare group model plans that really don't know because they are capitating the medical group and have no idea what the experience is for their medical group providers.

Next I would like to talk about the Twin Cities experience. I have extracted summary statistics from the annual filings with the insurance department for three of the largest plans in the Minneapolis market. I think it is interesting to look at these and get some idea of recent trends in a mature HMO market. Exhibit 10 shows the reported revenue per member per month during 1986, 1987, and 1988. The actual net income of the plans as a percentage of total revenues is also shown. These are not increases. The margins have been very thin. What this describes is that the trends have been very low, much lower than anything throughout most of the nation during this time frame. Again, I would say that the rate increases have exceeded, at least in 1988, the increase in revenue there as these plans were playing catch up with cost trends higher than originally projected.

EXHIBIT 10

MINNESOTA HMO REVENUE PER MEMBER
PER MONTH -- COMMERCIAL

	1986	1987	1988
PHP	$62.45	$61.85	$63.71
Income	.1%	(2.6%)	.3%
Group Health	53.79	55.66	59.67
Income	.8%	0.00%	.6%
MedCenters		56.40	63.05
Income		(.7%)	.6%

I would like to note one thing regarding PHP. PHP is a large IPA in the Twin Cities, and they withhold a portion of the physician fees to provide a cushion against adverse experience during the year. They paid out only a portion of what they withheld in each of these three years. Had they been in a situation where they were actually paying out before the withhold, they would have lost money in all three years. In 1987, I believe their losses would have about doubled. Clearly, they were relying on that withhold to cushion the impact of adverse cost trends on their organization.

Exhibit 11 is a summary of inpatient utilization results showing admission rates or discharges per thousand and days per thousand for the even-numbered years during the 1980s. This shows there has been a huge decrease in the admission rate and days per thousand during this decade in the Twin Cities.

EXHIBIT 11
MINNESOTA HMO UTILIZATION COMMERCIAL

Discharges Per 1000	1982	1984*	1986	1988
PHP	89	78	70	70
Group Health	99	90	70	67
MedCenters	95	71	61	68
Days Per 1000				
PHP	412	344	307	284
Group Health	399	315	281	288
MedCenters	362	300	247	274

* Year after nurses strike.

I would like to focus on that last column which shows the current state of affairs among Twin Cities HMOs. I think it is quite remarkable. It is maybe somewhat indicative of where at least some of the other larger HMO markets may ultimately head. I would certainly say that this experience rivals that in the California market at this point. As I mentioned earlier, much of the rest of the country is quite a bit higher. Minnesota is not all that close to California and I have always questioned the reasons for the major geographic differences in inpatient utilization. This throws a little water on the theory that there should be anything too major about those differences. Only time will tell, but I think that in other markets where HMOs are a big factor, we are due to see some ongoing decreases in utilization.

One further thing on this exhibit before going on. You will notice the footnote about the nurses strike. This is maybe what every community needs -- one year of a nurses strike to straighten things out. I think what the Twin Cities found during that nurses strike was that it was not necessary to keep mothers in the hospital two days after delivery. The two-day normal delivery became the norm that year and has been the norm ever since. I believe the average length of stay for OB stays, including C-sections, has been a little bit less than three days for the last few years. This is certainly lower than in most communities.

Exhibit 12 summarizes some of the cost trends for noninpatient services. I have compiled the cost per member per month for these three plans for 1986, 1987 and 1988, with the exception of MedCenter's 1986 experience, which we did not have. One of the primary things is the huge difference that PHP would have incurred in cost had they paid out the entire physician withhold.

EXHIBIT 12
MINNESOTA HMO NON-INPATIENT COST TRENDS

	Non-Inpatient Cost PMPM		
	1986	1987	1988
PHP (a)	$33.27/37.05	$35.30/40.16	$43.05/45.42
% Increase (b)	--	8.4%	13.1%
% Increase (Adj.) (c)	--	8.4%	16.5%
Group Health	$37.34	$42.35	$44.83
% Increase	--	13.4%	5.9%
% Increase (adj.)	--	8.3%	3.2%
MedCenters	--	$40.31	$42.81
% Increase	--	--	6.2%
% Increase (Adj.) (c)	--	--	6.7%

Note: Includes Commercial, Medicare, and Medicaid.

a. First figure is reported cost; second figure adds in difference between full physician withhold and net withhold paid.
b. Reflects increase in cost with full withhold.
c. Approximate adjustment for shift in Medicare/Commercial mix.

PANEL DISCUSSION

In 1987, the physician withhold that they did not pay out was worth about $5 per member per month, in 1986 about $3, and in 1988 about $2.50. There was quite a significant portion of that they withheld from the physicians. The increases for PHP are clearly substantially higher than the increases for Group Health or MedCenters, which would be expected with PHP being a fee-for-service system and subject to much less control, particularly on outpatient services. MedCenters is a group practice plan that capitates their medical groups and has a significant say in how much the capitation rate is being increased from year to year. Group Health is a staff model with its own salary position staff. They also have a smaller medical group network that they capitate, but the vast majority of their population is enrolled with their own health care centers. The increases there have been quite low. I tried to indicate an adjustment in the cost trends to reflect the shift in the Medicare commercial mix, since the annual statement data does not break out Medicare lines of business separately.

The experience in the Twin Cities market is probably indicative of trends for the past few years in other mature HMO markets like California. I think where we have seen much larger increases of 20% and greater in cost trends over the past couple of years has been in smaller markets where the HMOs have not reached the threshold level where they can really clamp controls on all aspects of the system.

Finally, I would like to make a few comments about what I see for the future. As I indicated, I think there is clearly opportunity for ongoing improvements in inpatient utilization. Both the California and the Twin Cities markets support that statement. Many plans that we have been dealing with through much of the country have been experiencing pretty consistent utilization over the past two or three years. There are some newer, more aggressive control systems on the horizon that could create a change in this pattern and further reduce inpatient utilization for these HMOs.

Patterns of practice will become an increasing area of emphasis. The software development in this area is certainly in its infancy. The industry is battling with huge problems in the area of inadequate data, inadequate recordkeeping and reporting of encounter information by physicians. It is going to take some time to work all this out, but I think the HMO industry is going to have to address it. I do not think they are going to tolerate absorbing the huge increases they have in these areas if they want to continue to be as competitive as they have been in the past.

Lastly, there is certainly an indication that in certain markets the HMOs have started to have an impact on the hospitals. There is a good chance that there will continue to be some shrinking of physician panels within HMO systems to get more of a nucleus per physician. While there has not been a huge shift towards risk arrangements that emphasize primary care physician management, there is a shift towards getting the primary care physicians more involved in management. That is probably going to continue. The HMOs will probably be forced to work with smaller groups of hospitals and physicians in order to obtain the necessary clout to better control what is going on.

MR. CHARLES J. SHERFEY: I am going to explore how all these trends get projected into the future -- primarily as we use them for retiree medical valuation purposes. We have been talking about a relatively short experience period, perhaps a year, and during some short period of time projecting costs forward for a rating period which is probably a year long, but could be even shorter than that. In retiree medical projections, we are trying to figure out what is going to happen 25 and 50 years into the future. It is a much more difficult type of projection.
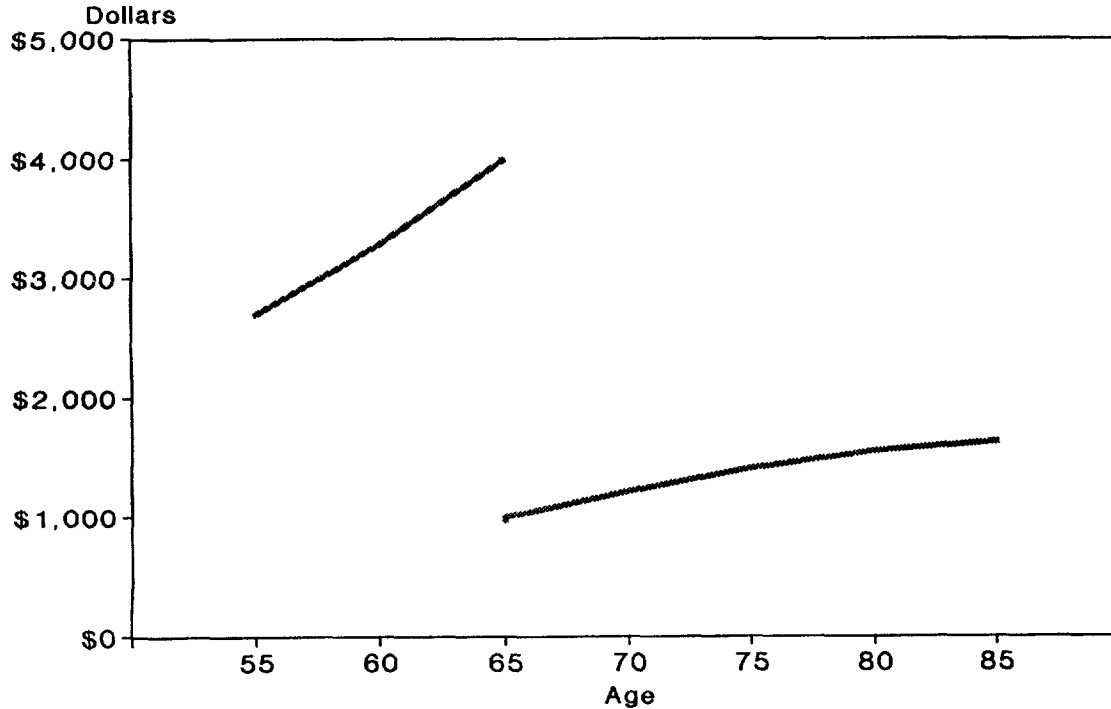
Before I get into that, I would like to comment on one aspect of trend factors -- antiselection. Jay mentioned this as one of his subjective factors, and I certainly agree it is very difficult to measure. I think antiselection or adverse selection is going to become more and more important -- not only in typical employer plans, but particularly in retiree medical plans where many of those plans do not now require employee contributions.

As employers struggle to manage this retiree medical liability that is going to be required, they will be either increasing existing retiree contribution requirements or starting to require contributions where they were not required in the past.

Exhibit 13 is intended to illustrate the pattern by age of medical care costs. There is no particular benefit illustrated here, but the cost is $4,000 per year at age 65 and increases at the rate of 4% a year prior to that which is a reasonable assumption for increases in costs prior to age 65. I have

Medical Care Costs Age Relationship

Medical Care Costs Age Relationship chart showing Dollars on the y-axis (from $0 to $5,000) versus Age on the x-axis (from 55 to 85).

assumed that Medicare then takes over and pays 75% of that amount, and the age increases decrease as a percentage after age 65, so the curve does not go up quite as steeply.

A typical pattern is for retiree contributions to be set at whatever amount active employees contribute. That contribution would be illustrated as a horizontal line drawn across this graph. Certainly at age 65, retirees might realize that they are getting a lot less than they were before, compared with their contributions, and would consider dropping out of the plan. I assure you that it is not the sick retirees who are going to drop out.

Another typical pattern is to have a contribution rate that would apply up until age 65 and then a lower rate after age 65. As those contribution rates have to be increased, you will get some antiselection.

We were working with one large plan that had a substantial increase in the contributions required from retired members. More than 20% of them dropped out, and it did not have any significant effect on the amount of claims paid.

Now moving ahead to the long-term projections of trend factors, we have an experience period during which we can go back and look into the history as far as we want. Most of the statistics I have are based on 28 years of data -- 1960 through 1987, and that just happened because there were 28 years of data in the tables I was looking at.

We are going to be making trend rate assumptions for retiree medical plans that are very visible. They are going to be disclosed in our reports, and anyone can look at them and see what we have been assuming. We want to make sure that they are as accurate as possible.

A couple of comments on terminology. I am going to be talking about growth rates in the medical care sector of the economy. Those rates are different from the trend rates we have been talking about. The growth rates do include both price increases and real growth, but they do not include deductible leveraging and some of the other things we talk about when we set trend rates for an insured plan.

There is a difference between the medical care and nonmedical sectors of the economy. Typically, growth rates for the nonmedical care sector are not published. It is certainly possible to calculate them, but we generally see CPI numbers, both for the total economy and for the medical care sector. Frequently, the total growth rates for the medical care sector are also published.

To give us a guideline of what has occurred in the past, Exhibit 14 is a graph of the medical care sector of the economy expressed as a percentage of Gross National Product (GNP) from 1960 through 1987; it went from 5.2% in 1960 up to 11.1% in 1987. My latest information is that it is about 11.5% now. The dollars involved went up about 19 times, and the average increase during those years was about 11.4%. Of course, the question we are trying to answer is how high is this percentage ultimately going to become?

I thought it might be useful to look at what has occurred in other countries. Exhibit 15 illustrates the percentages of their economies represented by medical care for selected countries. I picked the major U.S. and Canadian trading partners and the countries with the highest and lowest percentages. The U.S. percentage is significantly higher than for any other country in the world. Exhibit 15 illustrates percentages of gross domestic product rather than GNP, and the U.S. percentage was 11.2%. The next highest was Sweden at 9% and then Canada, France and Germany are about the same. The lowest recorded number is for Turkey at 3.5%. I suspect there are many other countries that do not or cannot tabulate the data to produce these numbers. It would certainly be interesting to see how countries like Russia and China would fit into this pattern.

One interesting sidelight here is that the U.S. is the only one of the countries illustrated that does not have a national health care system. Of course, there are arguments that nationalizing our system would increase our costs further. Those arguments certainly cannot be supported by Exhibit 15.

I have discovered that comparisons with other countries are not really much help to me in predicting what is going to happen in the future with respect to U.S. trends or medical care's share of the GNP.

U.S. Medical Care Costs
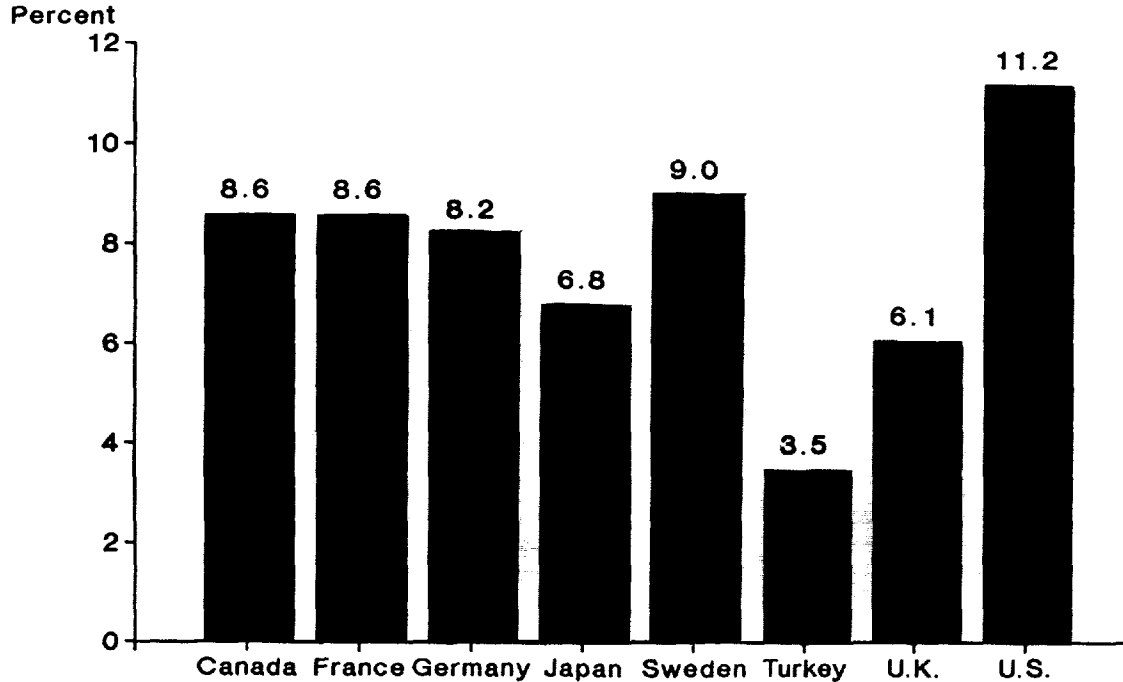## as a Percentage of Gross National Product
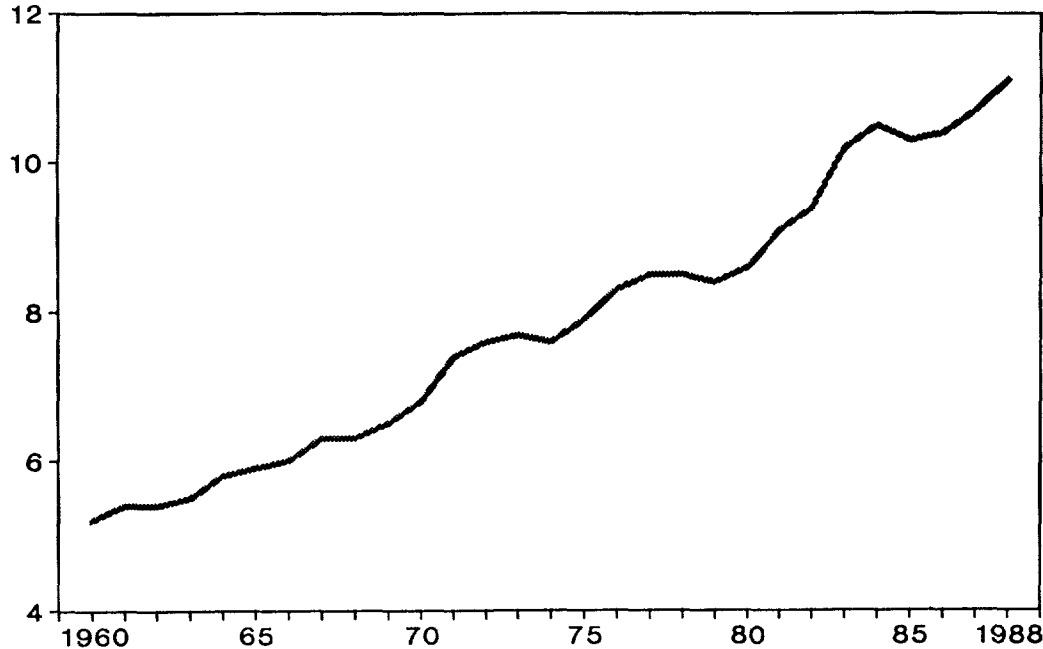
1987 Medical Care Costs
as a Percentage of Gross Domestic Product

Percent

Bar chart showing 1987 medical care costs as a percentage of Gross Domestic Product by country:

- Canada: 8.6
- France: 8.6
- Germany: 8.2
- Japan: 6.8
- Sweden: 9.0
- Turkey: 3.5
- U.K.: 6.1
- U.S.: 11.2

Exhibit 16 provides some figures for this same 28-year period for growth in the medical care sector of the economy and total GNP. In the medical care sector, prices went up 6.7% a year. There was 4.7% real growth for a total of 11.4%. That is the percentage I just mentioned. For the total economy, prices went up 5.1%; there was 3.4% real growth for a total of 8.5%.

EXHIBIT 16

PRICE AND REAL GROWTH
1960 - 1987

	Medical Care	GNP
Prices	6.7%	5.1%
Real	4.7	3.4
Total:	11.4	8.5

During this period of time, the real growth rate was pretty high. I know it is high compared with almost any other period I have looked at. Another comment on the real growth in the medical care sector of the economy -- we talk about real growth meaning things like increases in utilization, shift of services, etc. One other factor at work is the aging of our population. Certainly as we age, more medical services are required, and those services are reflected in this number. They are going to be reflected to an even greater extent in the future.

To try to figure out what might happen in the future, we can review projections that have been made. *Hospitals* is a magazine published for hospitals, and it surveyed several individuals in 1989 and asked them what percentage of the GNP in 1995 would be represented by the medical care sector. The lowest estimate was 11.6% which may be about where we are today. The highest they got was 15%, and the mean projection was 13.1%. That is just six years from now.

As for other projections, a couple of charitable foundations paid for a 1988 study by the Institute for the Future from California. They interviewed many different people and came up with projections for the year 2000. This is eleven years from now, and they actually split it into two scenarios. Their first scenario came up with 10.4% of the GNP as the medical care sector -- less than the current level. The second scenario was 12.7%. A fairly narrow range, I thought. You can see that those numbers are lower than most of those projected in the *Hospitals* survey. They are lower, even though they are a year 2000 projection and the *Hospitals* survey is a 1995 projection. These two projections just go to 1995 and 2000, where, as I mentioned, we need projections for many more years than that. Actuaries as a group have been criticized sometimes as being conservative, but here we are required to stick our necks out and come up with some numbers many years into the future.

There are other projections that do go further into the future. There is a Medicare projection that predicts that medical care will be 15% of GNP by the year 2000. You will notice that percentage is higher than the Institute for the Future's second scenario projection. Medicare hedged a little bit going beyond 2000 and included only the effect of aging on increases after 2000. They projected that more than 19% of our GNP would be consumed by medical care by the year 2025. So you can see that if we include the other factors that will affect increases in the medical care sector of the economy, we will get substantially more than 19%.

Coopers and Lybrand recently completed a major study for the Financial Executive Institute and were required, of course, to project medical care costs. They came up with high, mean and low figures. Their highest projection was for 35% of the GNP to be made up by the medical care sector. Their mean was 25% and their low was 19%. You can see that, compared with what we have right now, many people are projecting significantly increased percentages of GNP devoted to health care.

You may recall a couple of issues ago in the *Health Section News* there was an article by Dave McKusick on this same subject. He obtained projections of medical care consuming around 35% of GNP, and he said "a scenario of a society being willing to spend a third of its resources on medical care seems not unthinkable." When I read that, I thought we should at least question the assumptions underlying such a projection. If you read the next issue, Dan McCarthy was the only one who put pen to paper, wrote in and suggested that we think about what else has to happen if we

are going to spend this amount of money on medical care. He also questioned whether our projections were reasonable.

I have made some projections and that is where we will go next. We are going to look at six very similar exhibits, so I will take a moment to explain the format (see Exhibit 17). What these exhibits illustrate are the percentages of GNP represented by the medical care sector in the year 2000 under various sets of assumptions. Along the top, we have four different medical care growth rates -- 6%, 9%, 12% and 15%. This is real plus price growth. You may recall that this is the number that averaged 11.4% during the 28-year period we looked at. So you might think of the 12% column as closest to what has actually happened in the past. This number has actually been more than 15%. We had two consecutive years more than 15% in 1980 and 1981.

On the left-hand side we have nonmedical care inflation rates. These are not typically published or publicized. For a reference here, you may recall on an earlier exhibit we had a 6.7% growth in medical care prices during that 28-year period and 5.1% in the total GNP, so the nonmedical care sector of our economy was growing at something less than 5%. We might look at the next to the last line, the 5% line, as a baseline figure. I have assumed 3% real growth for these calculations, and you may recall the actual real growth rate was 3.4% during that 28-year period.

I caution you against reading too much into these numbers. Anyone with an HP-12C, a PC or an actuarial student can come up with some assumptions and make these calculations. My purpose is to show what will result if we have this combination of assumptions, and I will focus on what will happen if historical rates of increase continue into the future.

From Exhibit 17 you can see that a continuation of our historical trends of about 12% in the medical care growth rate and 5% increases in prices combined with the 3% real growth would produce 16.7% of the GNP in the medical care sector in the year 2000. This is a higher number than all of the other projections we reviewed. It is also interesting to look at the sensitivity. That percentage is very sensitive to changes in the medical care growth rate as well as the nonmedical care inflation rate. If there are changes, it is most likely that medical care growth will be related to the nonmedical care prices, so going on a line, a diagonal from the upper left to the lower right would be most likely. But, if you pick a number more than one line or column away from that 12% or 5% baseline, you are departing quite a bit from the historical pattern.

Exhibit 18 illustrates the same numbers, but going 25 more years to the year 2025. Here you can see you have a third of the GNP represented by medical care. We are in Dave McKusick country here, and I think we have to start looking at the assumptions as to what will have to change and what needs to change to keep this number at a more manageable level.

Exhibit 19 illustrates the year 2050 and here we are at 55% with just a continuation of our past trends.

I mentioned that we have had fairly high real growth during this 28-year period 1960-1987. On these last three exhibits, I have assumed 3% real growth in the future. Many question if we can sustain that level of real growth. I imagine this is like many things -- if you had asked 28 years ago, people would have questioned whether we could have sustained the historical level of growth also.

I have three other exhibits where the only change I have made is that I am assuming 2% real growth instead of 3%. Assuming 2% real growth means the medical care sector would consume 18.4% of the GNP in the year 2000 based on a continuation of current trends as illustrated in Exhibit 20. That is up from 16.7% on the 3% real growth assumption.

Going out to year 2025 in Exhibit 21, it goes up to 41.5% -- that was compared with 33.2% on a 3% real growth rate assumption.

Going out to 2050 in Exhibit 22, it gets up to almost 70% compared with 55%.

I do not consider these figures realistic, but they are what would happen under these sets of assumptions.

Medical Care's Share of GNP in Year 2000 Under Various Economic Scenarios

Non-Medical Care Inflation Rate (3% Real Growth)	Medical Care Growth Rate			
	6%	9%	12%	15%
3%	11.1%	15.2%	20.3%	26.5%
4%	10.0	13.7	18.4	24.2
5%	8.9	12.3	16.7	22.0
6%	8.0	11.1	15.1	20.0

Medical Care's Share of GNP in Year 2025
Under Various Economic Scenarios

Medical Care Growth Rate

Non-Medical Care Inflation Rate (3% Real Growth)	6%	9%	12%	15%
3%	11.1%	26.5%	50.3%	73.4%
4%	8.0	20.2	41.5	65.9
5%	5.8	15.1	33.2	57.6
6%	4.1	11.1	25.9	48.9

Medical Care's Share of GNP in Year 2050 Under Various Economic Scenarios

Non-Medical Care Inflation Rate (3% Real Growth)	Medical Care Growth Rate			
	6%	9%	12%	15%
3%	11.1%	42.0%	80.0%	95.5%
4%	6.5	28.6	68.9	92.1
5%	3.7	18.2	55.2	86.7
6%	2.1	11.1	40.9	78.5

Medical Care's Share of GNP in Year 2000 Under Various Economic Scenarios

Non-Medical Care Inflation Rate (2% Real Growth)	Medical Care Growth Rate			
	6%	9%	12%	15%
3%	12.4%	16.9%	22.4%	28.9%
4%	11.1	15.2	20.3	26.5
5%	10.0	13.7	18.4	24.2
6%	8.9	12.3	16.7	22.0

Medical Care's Share of GNP in Year 2025 Under Various Economic Scenarios

Non-Medical Care Inflation Rate (2% Real Growth)	Medical Care Growth Rate			
	6%	9%	12%	15%
3%	15.2%	34.1%	59.2%	79.8%
4%	11.1	26.5	50.3	73.4
5%	8.0	20.2	41.5	65.9
6%	5.8	15.1	33.2	57.6

Medical Care's Share of GNP in Year 2050 Under Various Economic Scenarios

Non-Medical Care Inflation Rate (2% Real Growth)	Medical Care Growth Rate			
	6%	9%	12%	15%
3%	18.5%	56.8%	87.9%	97.5%
4%	11.1	42.0	80.0	95.5
5%	6.5	28.6	68.9	92.1
6%	3.7	18.2	55.2	86.7

Now what does all this mean? I think it means several things. One is that we have to recognize the difference between growth in the medical care sector of our economy and trend factors we use either for pricing next year's insurance product or retiree medical benefits in the future. Once we have recognized the difference between those two, we have to try to analyze and understand the reasons for the difference. Then we have to review and refine our models so that they do reflect possible reality.

Many of the changes that employers are making in retiree medical plans are plan design changes where they are changing features of their benefits to manage the liability. Realizing that the different components of those plan changes have different trend factors is going to be very important.

In conclusion, remember that the assumptions we make here are very visible. We are going to have to justify them to our clients when we make these types of projections. I think we should include in our reports what our assumptions will produce as a percentage of GNP in the future. We should review that with our clients; then we will have a better understanding of how medical care costs affect not only our plans, but our economy.

MR. CHARLES S. FUHRER: I have done some work at looking at the trends in medical care costs. This is a relatively incomplete study, but I thought it would be interesting to present it at this session. I have been working, more or less, in health care insurance since 1975. Some of you probably have been working longer and could give me more history, but it seems to me that the health insurance industry suffered losses in the past that were somewhat periodic. My perception is that 1987 was about the worst year in the recent past and before that, there was a bad year in 1981 and before that in 1971. I am not sure if that was 1981 or 1979; my memory is not too good. If we take it to be 1979, then it looks like a regular eight-year cycle. Of course three instances, each one eight years apart, do not give us much indication that this is very regular yet.

I began to wonder why this might be happening; I know that the casualty business always likes to talk about an underwriting cycle. One explanation sometimes given is that it is caused entirely by our own attitudes in the insurance industry. When everybody is feeling optimistic and happy, some companies go out and aggressively write business. The other companies see that they are losing some business and they get more competitive. We get into a real pricing war and we are all writing business like crazy. Sooner or later we start finding that we are losing money badly. Now the cooler heads come in and say, "We cannot do this, we are losing a lot of our corporate surplus," and so now all of a sudden the watch word is conservatism and careful underwriting. Everybody starts taking responsible positions and using relatively higher assumptions as far as trend or whatever they use in pricing. Before long, everybody is doing a lot better. They are making money just about every place they look. Now somebody comes over from the marketing side and says "Gee, we could write more business. We don't have to be so conservative, everybody is making money." That takes us back to the beginning.

This attitude towards the insurance industry compares us with lemmings who decide to go off a cliff just to follow one another. I question whether we are all that poor in managing our business. We are not complete fools. I decided that maybe there was really something going on in the world that would cause this to happen. The obvious place to look was in trends. If you had a fluctuating trend, with some sort of relatively long cycle, then at the time the trends had just come down to a low level, everyone would be making money and they would base next year's trend rates on what they experienced last year. Just a normal cycle of the trends going up and down would create these kind of bottom lines. I decided there probably was something real out there that was actually happening in terms of cost. I also questioned whether there might be a periodic cycle that was regular and measurable.

I needed to take a look at some data, and what I have done so far is look at the medical component of the CPI. This is not real good in that it ignores changes in utilization. Apparently Chuck Sherfey was able to get some data on the health care national product in the economy, and we could have used per capita numbers from that. This is the next thing I want to do. Of course, it may not affect insurance pricing. I am not sure if our insurance sector would be the same thing as national economic data. Maybe I can get some insurance data for the whole economy. Of course the problem with that is that it would not be adjusted for age and some of the other factors that Jay mentioned. I am not entirely sure what kinds of data are available. What I really wanted to do is the kind of study that Jay did for the last 20 or 25 years or something like that. At least

at my company I couldn't get any data for more than three years without working pretty hard for it. What I have done is on the CPI. It used to be a rule of thumb that if you took the CPI component of medical care and took the increase and multiplied by about two, you would get to where your trend was. The data Jay had also looked that way. I do not think it is completely useless, but I do realize that the CPI is only part of the total picture.

Exhibit 23 illustrates what the medical component of the CPI has looked like for the last 22 years since 1967 through 1988. It looks like kind of a bumpy increase. Looking at it from a distance, it smooths out some of the increases. It is still not very irregular. I have made 1967 equal to 100 and everything relative to that. The first thing you want to do when you look at a series is fit some sort of curve to it and assume that is going to continue in the future. Everybody is using an exponential trend for this, which is the equivalent of fitting the yearly percentage increases assuming they are constant. Exhibit 24 shows the exponential fit to the CPI values using least squares. It may not look a whole lot different from the prior exhibit which maybe loses something. If you look at the CPI in terms of percentage changes during the period (Exhibit 25), we can see a little more what is going on. It had a low of about a 3% increase back in 1972 and a high of more than 12% in 1975. It has fluctuated quite a bit.

Exhibit 26 shows a polynomial fit. I guess this is great except that I do not think that too many people would want to assume that it is going to continue on down into the future and that it probably will be negative by 1997. The effect of the exponential fit is to put a straight line through the middle of it. In Exhibit 27 we have the CPI with an exponential fit. It is sort of in the middle of all the values.

The next thing I wanted to do was look at how the CPI increases varied relative to the exponential fit. Maybe I could see what kind of series this was and try to project it into the future. Somewhere along the line I learned a little bit about time series analysis, which I guess those of us who took our associateship exams before 1975 aren't supposed to know (they added them to the syllabus in the early 1980s). I had a lot of trouble and I had to learn it myself. Probably the new ASAs in the audience can tell me what I did wrong. I calculated something called auto correlations on that series, as shown in Exhibit 28. If these decay down to zero as you go to the right, that means you have a nice stationary linear model, but they don't. Maybe there are some cycles going on, and if I do some differencing I can look at what might happen. With four-year cycles the auto correlations did decay down to zero (see Exhibit 29), so we have a stationary model. We are going to predict what is going to happen in the CPI in 1989 through 1995 as shown in Exhibit 30. It is going to continue on up in 1989 and 1990 and then it is going to come back down again. At least that is what was predicted by doing it this way. There is some sort of four-year pattern on these ups and downs and this is tracing that. I don't believe what is going on past 1990, but there was some real indication that it is going to be higher in the next two years. I can hardly wait for 1991 to see if this is going to work. The fit was actually quite good. The confidence intervals are not really as large as you think they'd be. So really it was kind of gratifying.

Obviously the next step here is going to be to find some indicators that go back the 40-50 years needed in this kind of analysis, something that reflects the full utilization trend. Then we can look at some other economic indicators. I was interested in what Jay showed where there was some correlation at one lag. I think we could go ahead and estimate it as a dual time series and see what is going on. I think it would also be interesting to look at insurance company results and see if indeed we see where the results are inversely related to the trend or maybe lagged a year or two after the higher trends. I think there are some more interesting things to do on the subject.
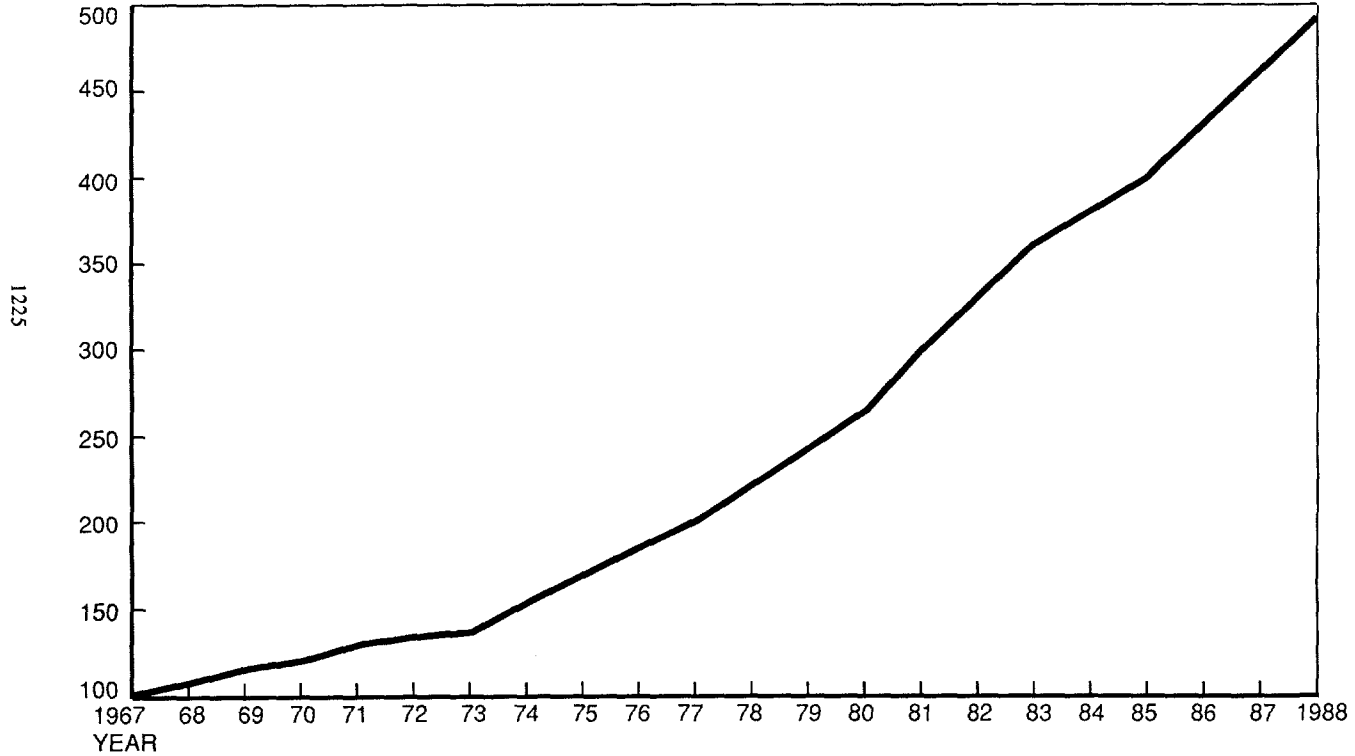
MS. ANNA M. RAPPAPORT: I have a comment on Mr. Fuhrer's remarks and also on Mr. Sherfey's. Mr. Fuhrer has been trying to model the changes in the CPI using statistical techniques.

I am concerned that so much has changed within the health care system that if you look at some of the basic underlying assumptions needed to do statistical modeling, this kind of modeling does not really work with a changing system. I guess I would like to see a kind of rigorous analysis of what assumptions are needed in order for the model to work and how much change in the underlying system does not work. I think there is a lot of danger in what is being done there.

Mr. Sherfey talked about percentage of GNP calculations. I have done some of those myself and I think we probably all have. To me, a critical concern, not from the point of view of doing actuarial calculations but from the point of view of understanding what is going on, is to try to
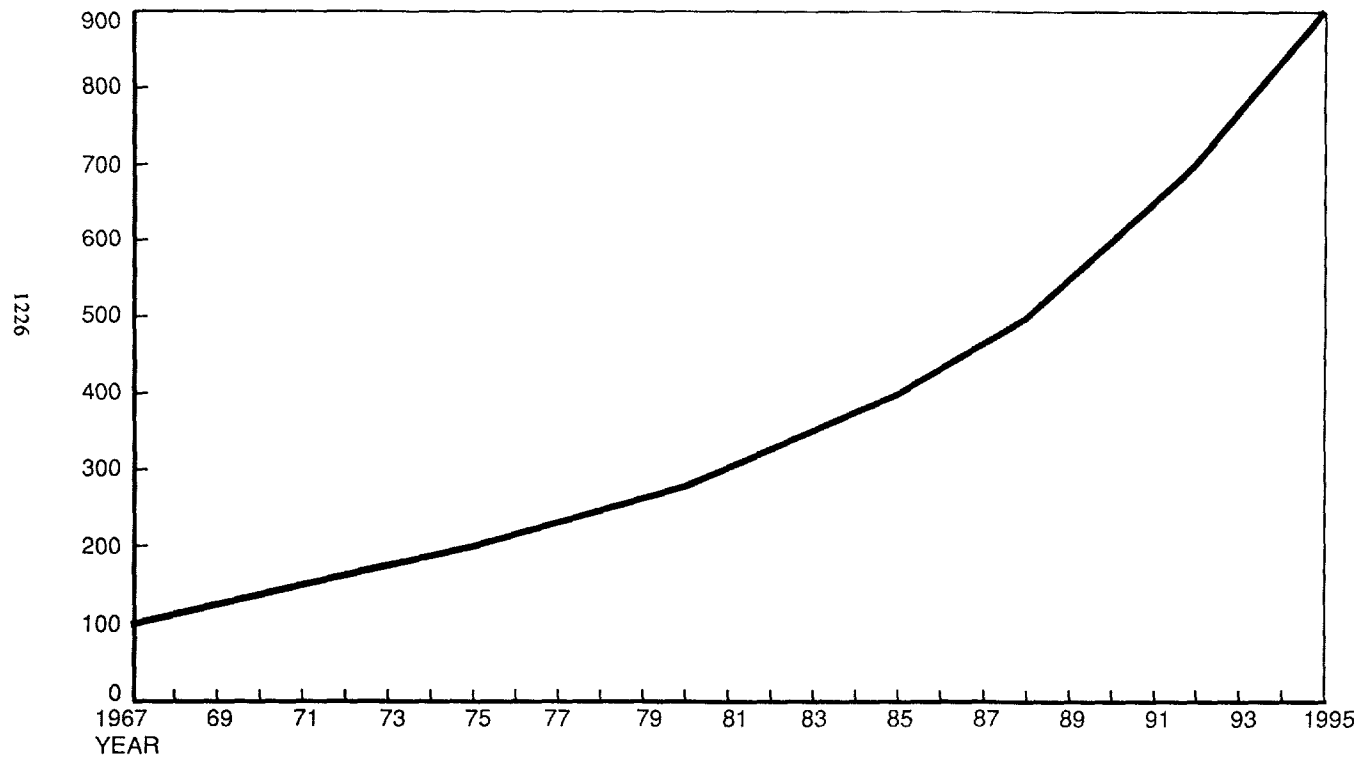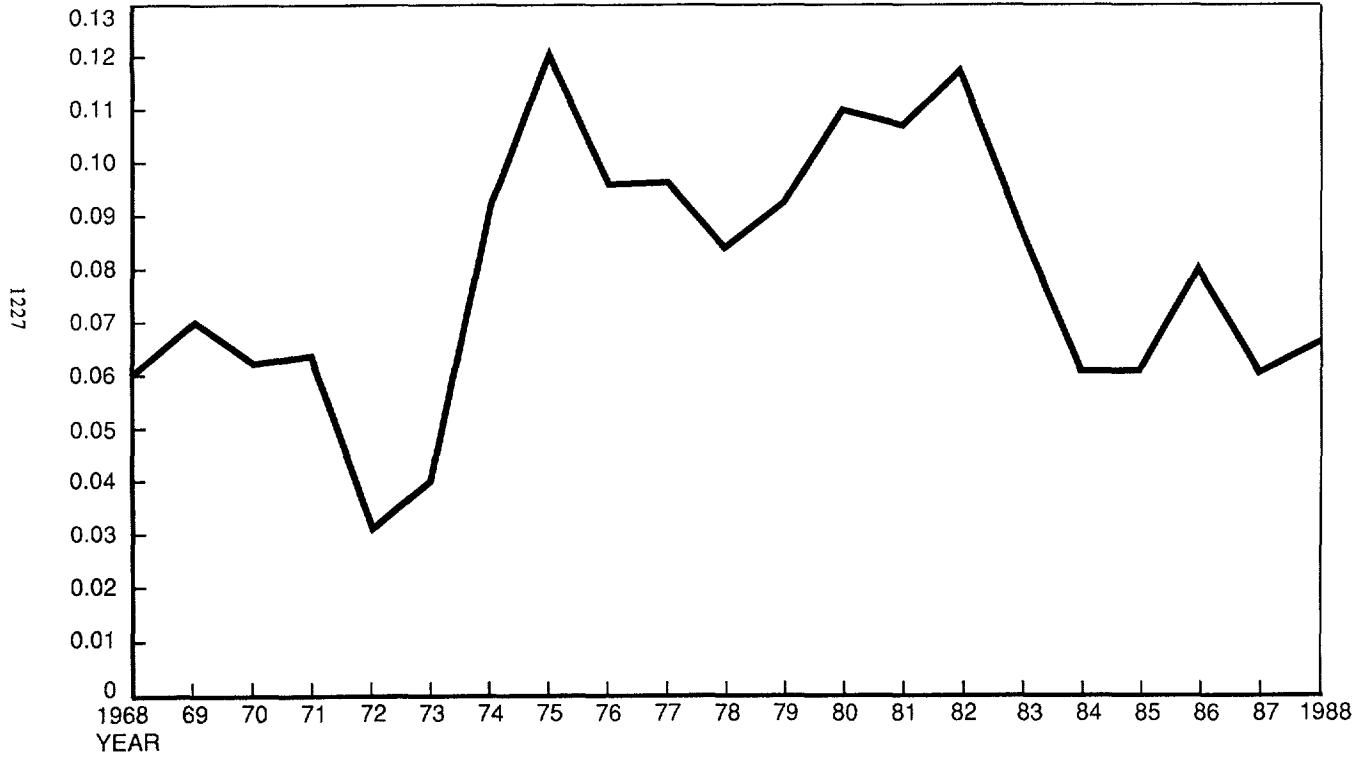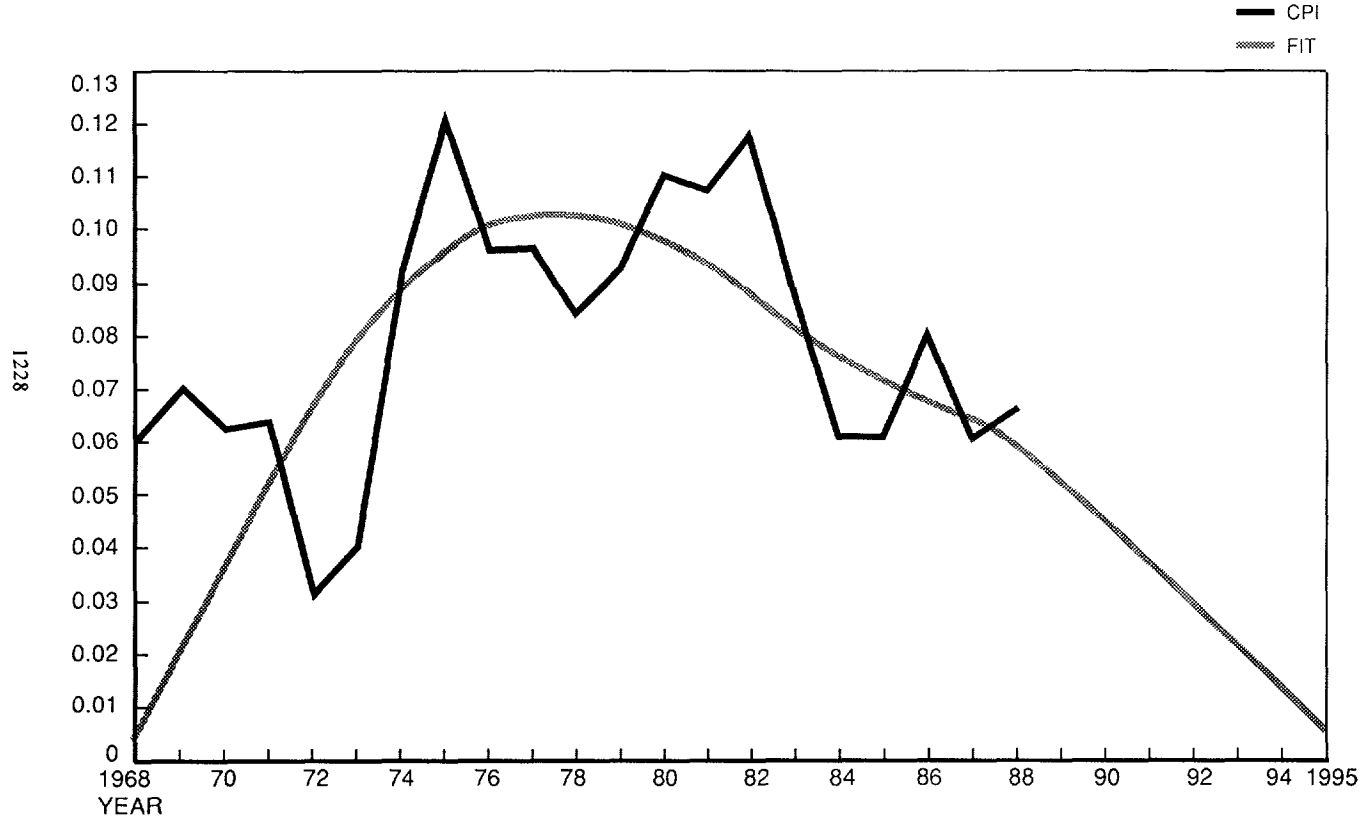
MEDICAL COMPONENT CPI

EXPONENTIAL FIT

CPI CHANGE RATIOS

HEALTH CARE TRENDS

EXHIBIT 25

CPI VS. POLYNOMIAL FIT
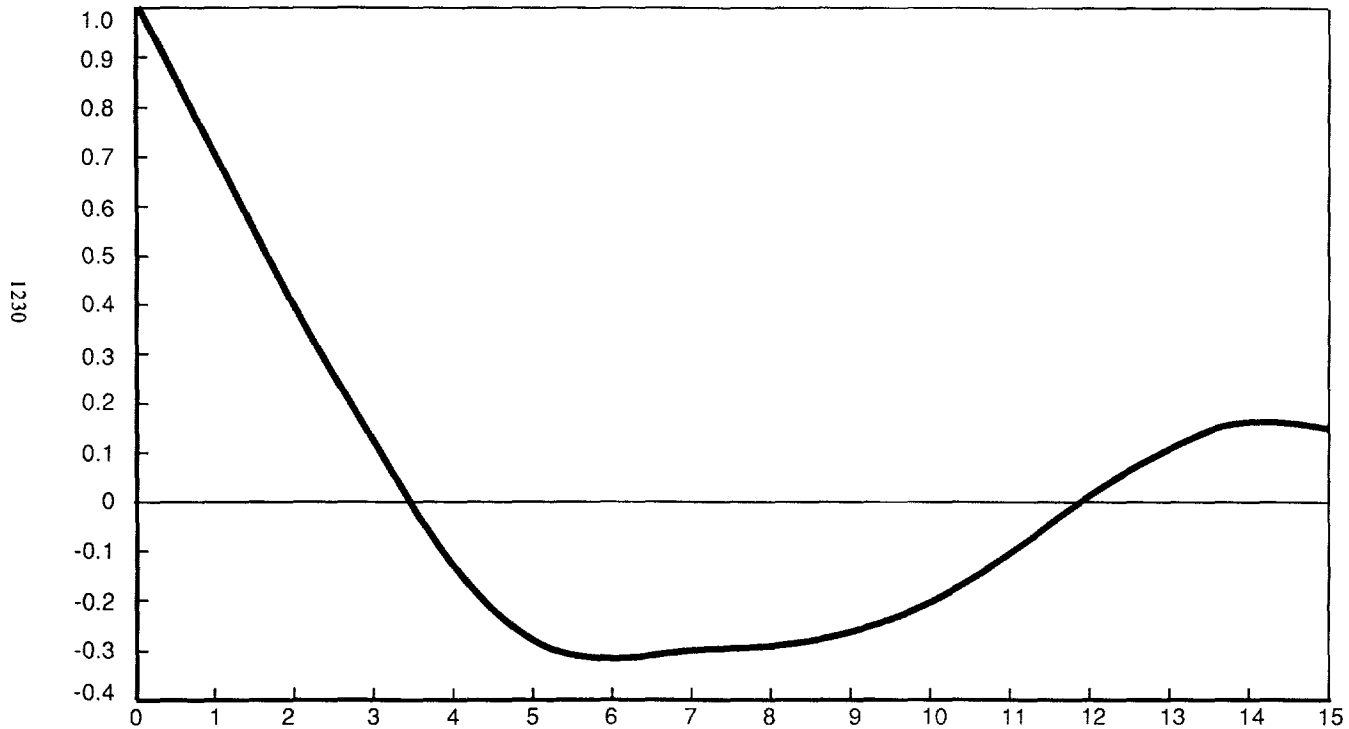
CPI VS. EXPONENTIAL FIT

HEALTH CARE TRENDS

EXHIBIT 27

AUTOCORRELATIONS
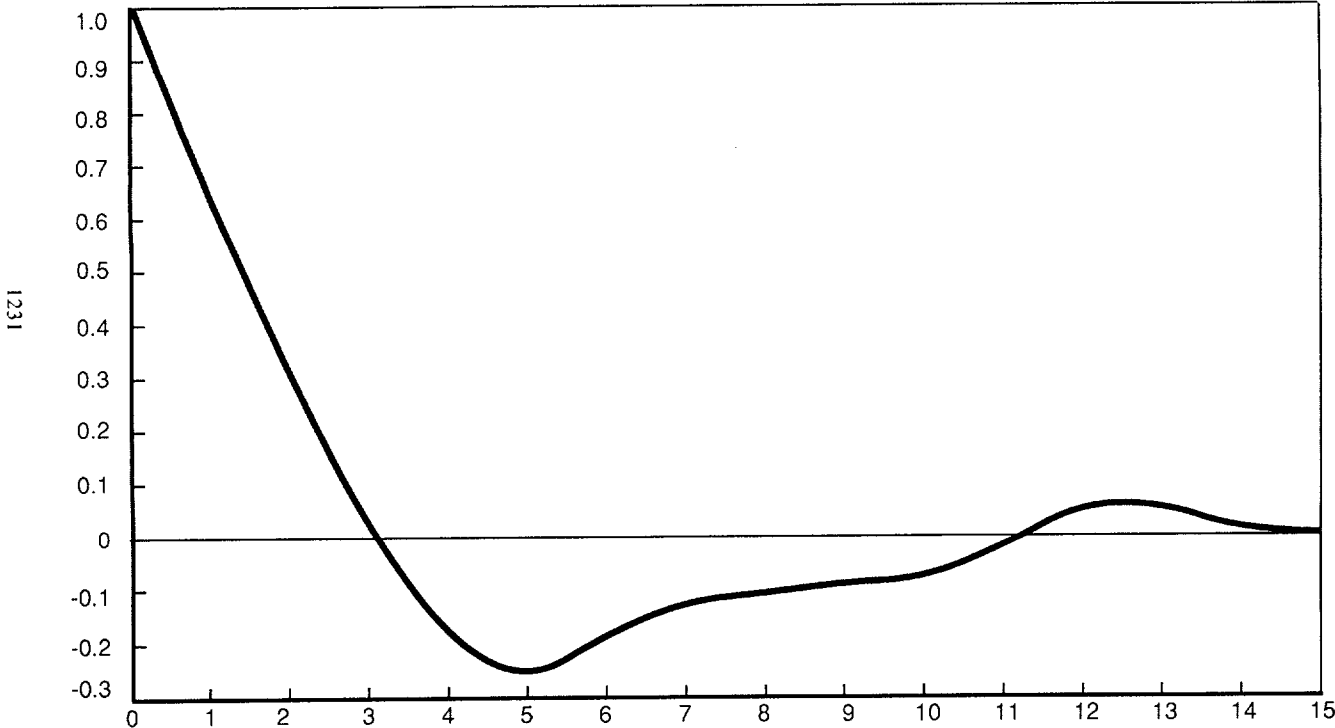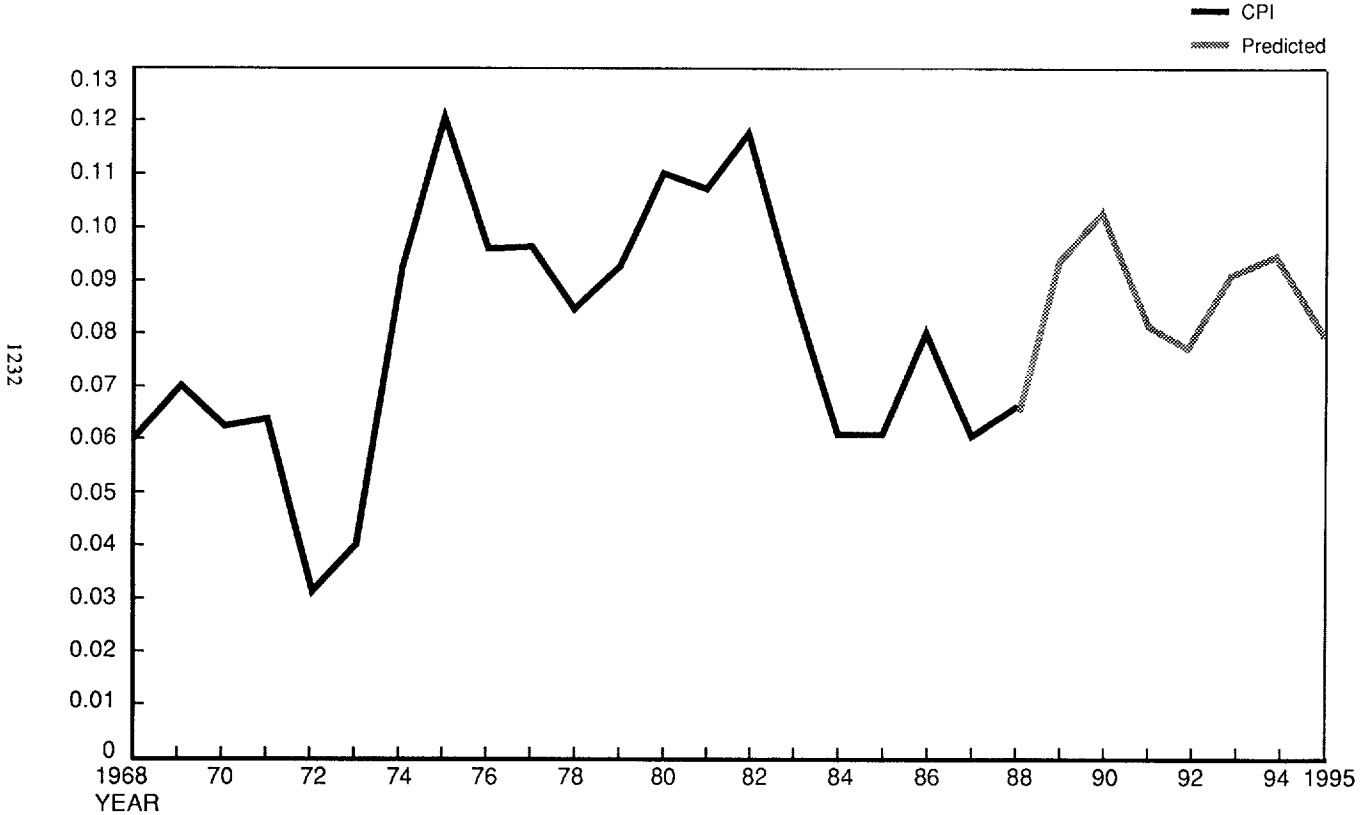
PANEL DISCUSSION

EXHIBIT 28

AUTOCORRELATIONS
4-YEAR CYCLES

PREDICTION OF CPI CHANGES

get some insight into what point is the limit. I agree with Chuck that we are not going to hit 60% or 70%. We all have our number. What is the maximum it can go to? We all have our ideas. What are some of the limit points and what are some of the things in the health care system that might change?

What is interesting to me about international comparisons is that not only is the system organized and financed differently, but there are different values that underlie when we do or do not deliver medical care, when we start various kinds of rationing, and what decisions we make about care. I see very major profound changes occurring in the health care system in terms of some form of rationing, different decisions about appropriateness of care, different allocation and national resources. I don't know when these will occur. I would like actuaries to be involved in the kind of analysis that helps us in those public policy debates. I think it is important for us to do these projections, but also to really look at the system underneath and see if we can contribute to solving what is going to be a horrible national issue.

MR. FUHRER: I just had a couple of comments and a question for Mr. Coldwell. This is also partially going to be a response to Ms. Rappaport's comments. First of all, I do not feel that assessing the future based on the past is like reading your horoscope. I think it is the only thing actuaries have ever done. I think that to the extent there are profound changes in our underlying systems, they get reflected slowly in the trend, and sometimes the underlying structure of deviations from that trend may not be changing at all. At least that is the kind of assumption I am making. I think this has some value. I think there is also a tendency to overestimate how different things are than they were even in the slightly distant past.

The second comment is that Mr. Coldwell included statistical fluctuation as a subjective factor and to my way of thinking, it is not a very subjective factor. It is something that is objective. We can measure statistical fluctuation, and we can estimate it.

Finally, I have a question. When you were dealing with benefit level index, one of the things you wanted to adjust for was benefit schedules. I wonder how you feel about the concept of using incurred covered charges instead of covered incurred claims as an initial in step one, so that you wouldn't have to do the change in benefit schedules?

MR. COLDWELL: I think the reason statistical fluctuations ended up on the subjective list is that you are never quite sure what you are measuring and you are not sure if it is a statistical fluctuation or real data. You can make an actual measurement of whether it is in some confidence interval or not, but you do not know how close you are to some real underlying mean.

Regarding the comment on the benefit level index, perhaps an easier way to look at things would be to look at the charges submitted rather than the benefits paid. If deductibles are varying and so on, that also affects the charges that have been submitted. Also things like prescription drug card programs dramatically affect the number of drug claims and that sort of thing. If you have a good rate manual that makes adjustments for that sort of thing, you might be better off looking at actual payments.

MR. IRWIN J. STRICKER: I have a question for Mr. Sorbo. On the hospital rates in the Twin Cities, did the participation percentage for HMOs vary in this period during the 1980s? If there was a significant change in the participation rates, that could change expected hospital utilization significantly.

MR. SORBO: The HMO penetration in the Twin Cities is in the mid-40s. It has increased quite a bit during the decade. Some might argue that as HMO penetration increases, it becomes increasingly more difficult for them to reduce utilization. This assumes that initially they have a select population and as they get a larger percentage of the total population, they enroll a broader cross section of the population. So I don't know that growth in itself is going to necessarily drive the inpatient utilization down.

MR. STRICKER: I would have thought that if the HMO penetration dropped, then you would get a more favorable rate. You would be left with a more select group. Did it increase?

MR. SORBO: Yes, it did increase quite a bit.

PANEL DISCUSSION

MR. KENNETH S. AVNER: Mr. Sorbo, Kaiser has received a great deal of publicity recently about the trends they are now using. *Health Week* indicates the trend is almost 19% across the network. This seems awfully high for staff model HMOs. Any comments?

MR. SORBO: We have seen some similarly high price increases for other staff model HMOs. In fact, we have seen some even higher than that. I don't know about Kaiser's specific situation, but I know some staff models, even those that have been around a long time, have gone through a bad bout of trend increases in their costs. They are still trying to identify what the reason is for this adverse experience. It seems to be the situation where they have had a huge turnover and a lack of underwriting of the new growth coming into the plan. I know of one specific case where this is true. Their turnover fluctuated from the historical level of 10% to around 25%, and they still grew. Apparently the new members they took on were a lot worse because of poor underwriting. They don't have a data system that they can use to substantiate this, but that is the suspicion. I think in some cases the staff models are just beginning to see increases in ambulatory costs and outpatient utilization that the rest of the industry has already experienced. I think it has hit different plans at different times. Maybe it has affected Kaiser recently, too.