

# RECORD OF SOCIETY OF ACTUARIES 1989 VOL. 15 NO. 1

## HEALTH CARE TRENDS

Moderator: DANIEL D. ANDERSEN  
Panelists: JOHN P. COOKSON  
            NANCY F. NELSON  
Recorder: DANIEL D. ANDERSEN

- o Overview of current trend experience
- o Techniques of applying trends in rating
- o Risk aspects of different trending methods
- o Implications of trend cycles for surplus requirements

MR. DANIEL D. ANDERSEN: Those of you who work in health insurance realize the importance of the subject that we are addressing. We have had a number of subjects on the agenda in different sessions. We have talked about managed care, underwriting practices, various rating practices such as tier rating for small groups, alternate delivery systems, and various product designs. I would suggest that in my experience, there is no single factor that affects the bottom-line of a health insurer more than the ability to accurately predict the future trends, the underlying trends in the health care systems.

We have two experts with us. As a matter of fact, while you have seen panels that are much larger than this, we only needed two in order to cover the waterfront. Nancy Nelson is from Tillinghast, an operating division of Towers, Perrin out of their Minneapolis office, and will be talking about the current experience in the health care rating trends. John Cookson is with Milliman and Robertson in their Radnor, Pennsylvania office. John will be talking about techniques of applying trends in rating, risk aspects of different trending methods and implications of trend cycles for surplus requirements. They are both consulting actuaries specializing in the health field. I'm Vice President of Actuarial Services for Blue Cross and Blue Shield of Iowa.

MS. NANCY F. NELSON: The comments I have generally been hearing lately are that costs are going upwards. I don't think I'm going to say anything to change that general kind of feeling. To give you an overview of my comments, I am first going to talk about the current situation for indemnity carriers and the approach they might use to establish a trend factor. Then, I will talk about the current situation for HMOs and the approach they might use to establish trend factors. Then, I'll talk about ways I think the trend analysis could be improved. My last topic will be the things that I think are concerns for the future for the industry.

Based on a survey done by Tillinghast which we call our Group Medical Care Trend Assumptions Survey, the average annual current trend rate assumption for group carriers for a comprehensive major medical product with a \$100 deductible is 22.5%. Of the 15 companies included in our most recent survey, which was done in February 1989, the most commonly used assumption was 24%. The trend assumptions range from a low of 18.3% to a high of 25%. It's interesting to note that only one company used an assumption below 20%.

In establishing trend assumptions, I think indemnity carriers look at both internal factors and external factors. The most important internal factor would be a review of recent claims experience on a cost-per-certificate type of basis. A refinement to this analysis might be a review by benefit plan design considering variations by deductible level, coinsurance level and out-of-pocket maximums. Another refinement might be to look at variations by group size. Another beneficial type of analysis is to consider variations by type of expense, such as inpatient hospital services, outpatient services, and physician services. In my experience, Blue Cross/Blue Shield plans are usually better able to do this type of analysis than commercial carriers. Another refinement would be analysis by region of the country.

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Another internal factor would be a change in the makeup of the carrier's enrolled groups. For example, has the mix of industries changed? The addition of a single large employer group such as a union type of group could change utilization and expense patterns. Similarly, a shift in marketing emphasis towards more professional types of organizations or some other specialized focus could shift utilization and expenses. A shift in the average group size could also affect costs.

When claims experience is reviewed, recent changes in claims adjudication practices should always be considered. Changes that could be important might include a modification in the practice used for assigning incurred claim dates, or a change in the amount of claim backlog.

In the area of external factors, the regulatory environment needs to be considered. Certain states are affected by hospital rate regulation. For example, New Jersey and Massachusetts both have hospital rate setting commissions. Changes in the Medicare and Medicaid program need to be recognized, as do any state mandated benefits. I am going to defer my comments on these, and talk about them later in the context of future concerns.

New technologies must be considered. For example, new treatment techniques such as diagnostic tools like magnetic resonance imaging (MRI) can affect costs. Another example might be the use of lithotripters to treat kidney stones. New drug therapies also fall into the category of technology. Examples of these might be new drugs to treat cardiac problems or to treat acquired immune deficiency syndrome (AIDS) patients.

The overall economy might need to be addressed. For example, what are unemployment rates? What's the overall inflation rate?

Social concerns need to be considered. Right now, the biggest social concern is probably AIDS. Currently, many carriers are including an explicit factor of .5% to 1% in their trend assumptions for AIDS expenses.

Lastly, on the external side, I don't think we can underestimate the importance of competition in the trend assumption. I think the trend assumptions used by carriers tend to be very tightly bunched. Our survey certainly indicated this. It's hard for me to believe that this is not partly by design. Competition from HMOs and PPOs and related selection considerations, as well as competition from other indemnity carriers, should also be considered.

The experience of our HMO clients indicates that right now current annual trend assumptions are in the range of 13% to 17%. In general, group model and staff model plans fall into the lower end of the range because they have more control over their expenses, while IPA model plans tend to fall in the higher end of the range. Contributing to the increase in expenses are utilization changes at an annual rate of 3% to 5%, physician fee increases at an annual rate of 6% to 8%, and hospital per diem increases at an annual rate of 10% to 15%. This, again, is internal data. I recently tried to find published data on HMO trend rates with very little success. There is some data published on HMO premium rate increases, but almost none on the underlying trends.

HMOs, similar to indemnity carriers, will consider both internal and external factors in establishing trend assumptions. But the overall emphasis is on internal factors. I also think there is a little bit of an attitude with HMOs of "Well, what do you mean trend? We just ask the hospital how much they are going to charge us and tell the physicians what we are going to pay them." HMOs have a little bit of a chicken-and-egg relationship with trend. It's hard to say whether HMOs set trend assumptions as a result of their negotiations, or if they are only able to establish negotiated rates as a result of the underlying trends.

The most important internal factor for HMOs are their fee trends, which are driven by contractual arrangements. On the hospital side, they might have a negotiated arrangement with diagnostic related group (DRG) payments, per diem payments, or a discount from charge arrangement. On the physician side, if the plan has salaried physicians or pays a capitation to their physicians, they should be able to project their expenses fairly accurately. When I say capitation, I mean the HMO is paying a fixed amount per member per month to the physician. Another way HMOs pay their physicians is to have a maximum fee schedule. If they have a maximum fee schedule and have done a good job of collecting historic data on billed charges, they should be able to project

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these billed charges, compare them to their maximum fee level, and have a pretty good idea of what their physician expenses are going to be.

Frequently, HMOs purchase laboratory and x-ray expenses on a capitated arrangement as well. If the HMO does purchase lab services from an outside provider, it is usually able to get a favorable rate and save a considerable amount of expense. This is especially important in relation to comments I have heard about lab expenses increasing as a result of physician-owned laboratories.

Similarly, HMOs may purchase mental health and substance abuse services on a capitated basis which helps to control their expenses. It has been my experience that when a plan moves to a capitation arrangement for these services, they are able to save a significant amount on a per-member basis and their utilization also drops dramatically. For example, one of my clients recently made the switch for mental health services. Their utilization dropped from 65 inpatient mental health days per thousand before the capitation arrangement to 35 days per thousand afterwards. That's a drop of almost 50% over about a three-month period.

HMO costs are running wild in the prescription drug area. Drug costs are inflating much more rapidly than other expense components. Many HMOs are attempting to control their drug costs through benefit design changes. These changes might include such things as use of higher copayments, or split copayments with higher copayments applicable to brand name drugs than to generic drugs. The use of drug formularies is also increasing. In the past, many HMOs were able to purchase their drugs on a capitation basis. However, pharmacies are less and less willing to do this, even if there is some sort of a shared risk corridor between the HMO and the pharmacy. There is a strong movement towards contracts paying a fixed dispensing fee and a percentage of the average wholesale price.

Hand in hand with the fee trends are changes in utilization. HMOs review certain key indicators to try to determine if experience is changing. These indicators might include the rate of hospital days, hospital admissions, same day surgery admissions, maternity rates, office visit rates, and prescription drug rates.

With regard to the utilization trends, I would say that a plan is going to be much slower to recognize in its pricing a downward trend in utilization than they would be to recognize an upward trend.

This is an example of trend factors used by one of my clients in establishing a 1989 budget:

### Example of Cost & Utilization Assumptions

Inpatient hospital	8.5%
Outpatient hospital	14.0
Primary care physician	3.0
Referral physician	12.0
Laboratory	10.0
X-ray	14.0

The trend assumptions vary fairly widely and are directly related to the degree the plan has negotiated arrangements. For outpatient hospital services and x-ray services, this particular plan has only minimal savings from negotiated arrangements.

Secondary to the fee and utilization trends, the HMO would review its experience by benefit plan. Typically, HMOs have at least a high-option plan and a low-option plan. Frequently, they will have a whole range of benefit variations in between.

HMOs might also do some type of analysis on a demographic basis. Examples of this might be a review of experience variations by type of group such as union groups, federal employee groups, state employee groups, small employee groups, individual enrollment, etc. Typically, a review of experience on an age/sex-specific basis is also done. Usually this analysis would be done in comparison to targets established at some earlier date.

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One other way that demographic experience can be reviewed is to look at variations and experience by tier rating structure. Our experience has been that there is a huge difference in the number of single contracts and average contract size by premium rating structure. This is an example of the variation experienced by one of my clients:

### Example of Demographic Variations by Benefit Plan

	<u>Single Contracts</u>	<u>Average Size</u>
One-Tier Contracts	13%	3.1
Two-Tier Contracts	29%	2.9
Three-Tier Contracts	42%	2.2

On the one-tier contracts, they have a very small percentage of single contracts relative to their three-tier contracts. When I say one-tier, it means that there is one rate; two-tier is a single/family rate structure; and three-tier is a single/two-party/family rate structure.

In regard to external factors, I think that they are considered in a general sense. However, I believe the trend factors used really reflect what is going on inside the specific HMO, rather than truly reflecting any external factors.

How can things be improved? For indemnity carriers, I think that some type of demographic analysis is important and much more should be done than is done currently. Generally, limited amounts of data are maintained on subscribers. As an example, we recently wanted to get accurate enrollment data on a limited number of employer groups as part of a client project. We wanted to get the data to analyze some utilization patterns, but this particular client's system couldn't interface claim data with enrollment data and the desired analysis was impossible. Even less data is typically maintained on dependents than is maintained on subscribers. In recent years, the dependent assumption has remained fairly static. By keeping this assumption constant, it is quite possible that trend assumptions have been understated, because the average family size has been decreasing in recent years. Other demographic refinements could include analysis by age, or by industry to a greater degree than is done now.

Another type of refinement would be more geographic analysis. I think this type of review is done now to determine overall variations by area. I think analysis should be done to try to pinpoint what the reasons are for the variations. For example, on the social side, new treatments are often used on the coasts before reaching the central part of the United States. Treatment styles vary. For example, hospital lengths of stay tend to be longer on the East Coast than on the West Coast. Certain economic types of factors may be regionalized as well. Examples of these might include levels of nursing shortages, nursing salaries, and their contribution to their hospital expenses, or variations in malpractice expenses.

Lastly, for most indemnity carriers, system capabilities need to be improved. Maybe I should have put this first because most of the additional analysis I have suggested will be impossible without enhanced computer abilities.

I think additional demographic analysis would benefit HMOs as well as indemnity carriers. I think they could do more than is currently being done. One example, which few plans are doing, would be an analysis of contract types. For example, a single contract may cover either a single person, or a married person electing single coverage. What's the variation in expenses inside of that contract type?

HMOs could also adopt a broader perspective which might help them to anticipate what's going to happen to them in the future. Another area for HMOs would be an increased awareness of selection issues. I think they lag behind their indemnity competition in this area. For example, I said earlier that many HMOs have high-option plans and low-option plans. I think it might be important to do more analysis of the types of people selecting the various plans. We have a theory that overall high-option plan experience may deteriorate as younger, healthier lives who want to minimize their costs select low-option plans. I don't think any plans are really able to determine if this is actually happening.

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What are the advantages of the additional analyses? I think it may permit problem areas to be pinpointed more quickly and in a more detailed way. Perhaps a quicker reaction to the problems will be possible. Trend assumptions could also be varied by some of the factors I've talked about.

Many of the things I have talked about are very closely tied into rating issues. Maybe they really are rating issues rather than trend issues. However, I think that and rating need to be considered together. It is not possible to split them apart.

Now, I'm going to switch gears and talk about future concerns. One area which has received lots of press lately is the problem of the uninsured. Currently in the United States there are somewhere between 32 and 37 million people without health insurance. There has been a great deal of activity on the state level to promote health insurance for this population. For example, there is the Massachusetts program, which is probably the best known and the broadest program. I heard recently at the panel discussion on national health care that at least ten other states are considering a similar program. Minnesota is one of them. The state of Washington has a very small demonstration type of project to provide coverage to a limited number of low-income uninsured people on a sliding scale sort of basis. Florida is beginning a program to make health insurance available to small employer groups who have not previously had insurance.

All of the state programs I am aware of have an objective of providing health services to the maximum number of people at the minimum cost. However, at the same time, most of the programs propose HMO types of benefit plans with lots of cost management features and first dollar benefits.

Each of the proposed uninsured programs raises concerns about cost shifting. However, who the shiftee is may vary. The cost shifting might be to the employer through use of a special payroll tax. This is contemplated in Minnesota. Cost shifting could also be to general taxes, or to the risk taker such as the indemnity carrier or HMO. Cost shifting could also be to the provider, the hospital or physician. In this case, costs would eventually be passed on to indemnity plans and HMOs.

I think there will be pressure on carriers and HMOs to support the uninsured programs. This pressure is likely to be particularly important for not-for-profit HMOs and Blue Cross/Blue Shield plans. Once a plan agrees to participate and support an uninsured program, there may be pressure to subsidize the program through absorption of administrative expenses.

The uninsured programs also raise concerns about utilization. There is a general consensus that people who are uninsured have a real pent-up demand and need for medical services and that as soon as they have coverage, their utilization of services will increase dramatically. However, in the activities I have been involved with in Minnesota, the legislators and other persons supporting the uninsured bill believe that because of managed care, the uninsured will cost no more to cover than an insured population.

State mandated benefits are an ongoing concern. I read an estimate recently that in some states mandated benefits account for 20% of employer health costs. That's a pretty big contribution. In the area of mental health and substance abuse, I think the trend in mandated benefits is going to be increased demands for long-term substance abuse rehabilitative services. Chiropractors and other allied practitioners are provided as mandated benefits in more and more states. One problem with these services is that there is not a well-established standard of care.

In vitro fertilization has been made a mandated benefit in Massachusetts. It has also been passed in Texas to the extent that it must be made available to groups. The employer has the option of whether or not to offer it to his employees. It has also been introduced to Minnesota. This is a very expensive benefit to provide. Costs are \$5,000 and up per attempt and frequently 3 to 4 attempts are required per patient. Utilization for in vitro treatment is likely to increase dramatically when it is available as an insured service. In addition to the high initial treatment costs, related medical costs are increased. This is due to an increased incidence of multiple births, problem pregnancies, and Caesarean section deliveries.

Well baby and well child care services were mandated last year in Minnesota. They must be provided on a first dollar basis. Overall, these costs have a fairly small total cost. However,

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depending on how the premium rate is structured, the cost may be significant. For example, if all of the costs for these services are included in the family premium, the increase may be substantial.

With regard to Medicare, at least two changes are anticipated in the hospital reimbursement which increase the potential for cost shifting. These changes include a reduction in the amount of the educational allowance, and changes in the treatment of the capital pass-through so that capital expenses are treated as part of the DRG. Changes in physician reimbursement are also contemplated. A likely scenario is implementation of some sort of a resource-based relative value schedule. Supposedly, this type of a schedule would be budget-neutral and have no effect on costs. However, I think it is bound to have some sort of effect on the delivery of services, and could very well have an effect on cost. Medicare will provide coverage of outpatient prescription drugs beginning in 1991. When a program this broad is introduced in Medicare, some effect on the delivery and utilization of services for the entire population will likely occur.

Next, there's Medicaid. Generally, states pay for Medicaid services at severely discounted levels. Recently, federal legislation expanded the ability of states to provide Medicaid coverage to women and children up to 185% of poverty. To the extent states do this and provide more Medicaid benefits, the potential for cost shifting increases.

The costs of providing extended health benefits under COBRA should be monitored. Right now, expenses under COBRA for the extension of health benefits are probably fairly stable. However, we need to continue to watch COBRA expenses because they are directly tied to changes in the economy and related changes in unemployment levels.

There are two concerns which relate specifically to HMOs. The first is the possibility of physician incentive legislation. The legislation that is contemplated would limit the mechanisms that HMOs use to reimburse their physicians. Particularly, it would limit the amount of risk that an HMO could place on any individual physician expenses for HMOs. The other concern for HMOs is experience rating. The HMO Act Amendments passed in the fall of 1988 permit HMOs to experience rate groups on a prospective basis. To the extent that HMOs experience rate their "good groups," their average cost or community rate will necessarily increase.

Flexible benefit plans continue to be popular. It is estimated that by the mid-1990s over 50% of large employers are going to have flex plans. In addition, flexible benefit plans are offered by increasingly smaller employers. With flexible benefit plans, there is potential for selection between HMOs and PPOs and indemnity plans. Flex plans also raise cost issues because costs are likely to increase due to the elimination of duplicate family benefits.

We have an aging population. This is a fairly minor concern, but with an aging population, we may see an increase in the demand for certain preventive services related to an aging population. Examples might be increased demand for services such as cardiac risk screening or mammographies. Possibly these preventive type services will be covered through state mandates. In addition, with an aging population, it may be very hard to keep hospital utilization rates stable in the long term.

Finally, no list of future concerns would be complete without technology. I think, in general, the new technologies being developed are going to increase costs. They are going to be an addition to rather than a replacement for current services. I think even though costs for a specific type of technology may decrease as it becomes more widely available, the increased utilization of the services will ultimately offset any potential for cost savings.

MR. JOHN P. COOKSON: I particularly enjoy coming to these meetings, especially every third year; in fact, I am booking my reservation for 1992 for the Spring Health Specialty Meeting. It seems like every three years, soon after we have completed a calendar year, we are at the turning point of what's happening in the health insurance industry.

We just completed three successive years of substantial red ink. If we go back three years to 1986, the industry had three of the best years ever (1983, 1984, and 1985). If we go back again to 1983, we finished three extremely poor years ending in 1982. Again going back to 1980, we had three good years ending in 1979. So make your reservations for 1992; it ought to be a fun time.

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The current environment which you saw in the illustration showed the average trend assumptions of the commercial carriers in the low- to mid-20s. That is basically what I have seen from the surveys. However, if you look at the Blue Cross and Blue Shield assumptions across the country, they are generally significantly lower, usually in the mid- to high-teens. There are a few that are in the low-20s, but very few. In fact, the Blues' actual experience that I have observed tends to be fairly consistent with the trend assumptions they are using; and in fact, they tend to have some margin in their assumptions relative to what they are experiencing at this point in time. Some have actually begun to observe and measure decreases in trend beginning in 1988, and others have not.

What we have done to try to get a handle on health insurance trends is develop a model from various sources of data. We use this model internally, sort of like you would use a manual rate to compare experience of a group as a reference point or a base of reference. This is like a manual trend and we use it with clients to take their historical trend information and use it as an input variable to project their trends. We also look at external variables that are affecting their business that make them different than the underlying forces of health insurance trends.

One example is an update we're doing on one large block of business; it's a multibillion dollar national organization. A year ago, with data through 1987, we projected the trends to peak in around the second quarter of 1988. In fact, the trends have peaked for this organization and they did peak during the second quarter of 1988. In fact, they peaked at a lower level than our model had projected. We were about two points higher in projection than where their actual trends peaked. More than half of the difference was due to a beginning 1987 trend overstatement because of an overstatement of claim liabilities. They had a significant drop in older claims liabilities which had occurred from a change in claims systems in the prior two years. Their experience has turned very favorable during 1988 and looks like it is going to be increasingly favorable during 1989.

Our model, on a historical or an actual basis, has shown on a 12-month moving average, moderate declines in the overall comprehensive major medical trends for the second and third quarters of 1988. We expect that will continue for the fourth quarter data, which has now just become available. One concern I have is that the first quarter of 1989 might be slightly reversed because of the severe flu season. We saw it nationally; it was very strong. At least in some areas, hospital occupancy levels were very high. Hopefully, that will be Medicare's problem but I'm not sure that it will just be Medicare's problem.

The objective of the model is to provide a base line of what the underlying trends are for everybody but Medicare, for the under-65 population, because that's what we are insuring. That is what our groups are insuring, that is what our groups are asking us to provide protection for. So it represents all payors to an extent and we need to adjust for any given carrier's own situation. For example, fee-for-service trends would tend to be a minimum of 1% and 1.5% to 2% higher than the model. The carrier with cost reimbursement negotiated fees would probably have somewhat lower trends than the model. The model does not reflect any elements of antiselection, which I think is the biggest potential problem in the differences in these trends.

The basic model starts with no deductible. We also look at \$100 and \$500 deductibles with out-of-pocket limits. The difference between a zero deductible and a \$100 deductible is about 1% and 1.5% to 2% trend difference. Thus, if we were looking at the fee-for-service or charge-based environment, we would be looking at trends somewhere between 3% and 4% above what our model indicated. We would be looking at 1% and 1.5% to 2% reflecting the \$100, \$200 deductible environment with out-of-pocket limits and another 1% and 1.5% to 2% reflecting the difference between what charge-based or fee-for-service-based carriers are paying relative to all carriers or all other non-Medicare payors combined.

In addition, there are substantial differences by region. We look at the model by region. We have been working on projections by region. The regional numbers are much more volatile, much more intractable. We have had some success and they are quite pronounced. The impact of DRGs by region has quite a bit of a different effect on hospitals, and inpatient and outpatient utilization trends by region are quite different. These factors are influencing the regional differences at this point in time. Cost shifting has been talked about in many of the sessions, and it's one of the significant variables that we look at in our model. What Medicare in particular is doing with respective DRGs is a significant factor in our future projections; or what Medicare is likely to do,

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what the budget proposals are, are very important. In addition, we now have to anticipate what the impact might be on the physician side or the outpatient hospital side. Medicare has already implemented some cutbacks in payment rates to hospitals for outpatient service. They've begun to reduce payments for outpatient surgical payment and they've cut back reimbursements for outpatient hospital radiology. The question is, "Will these cutbacks have a similar impact on those services as the DRG reductions in the last few years have had on inpatient hospital?" I don't think the physicians are in quite the same position to shift costs as the hospitals are, but we'll have to see. We have got a couple of years before a lot of these things become implemented.

The last thing is in looking at the history of our model. We found that it is quite representative of some large national data bases that are available. A number of local Blue Cross and Blue Shield plans' actual experience trends also compare favorably to our regional trends. In fact, it is fairly representative of what is happening in reality.

It is intriguing to look at the difference in the trend assumptions, the high trends, the commercial insurers' assumptions and look at what is happening to gross national product trends in medical care. Medical care trends in the gross national product per capita, generally, in the last couple of years, have been in the 11% to 12% range. Even if you control for Medicare trends and take them out, you are still not going to get trends for the rest of the business that's much more than 15% to 16%, even on a very conservative estimate. If there is an actual observed trend of 20+%, it has got to be due to selection, benefit changes, mandated benefits or other things because it doesn't represent the underlying forces of inflation.

When we do our projections, we look at a number of factors. We develop scenarios. It would be nice if we could project what was going to happen to hospital admissions; that would have been great if we could have projected that in 1983. I don't think anyone anticipated the dramatic impact on hospital admissions or hospital length of stay. The rate of decline in hospital admissions has moderated in the last couple of years. Nationally for the under-65 population, the trends appear to be in the 2% to 3% range and they are fairly stable, so developing a couple of scenarios there is not a significant risk or a significant problem.

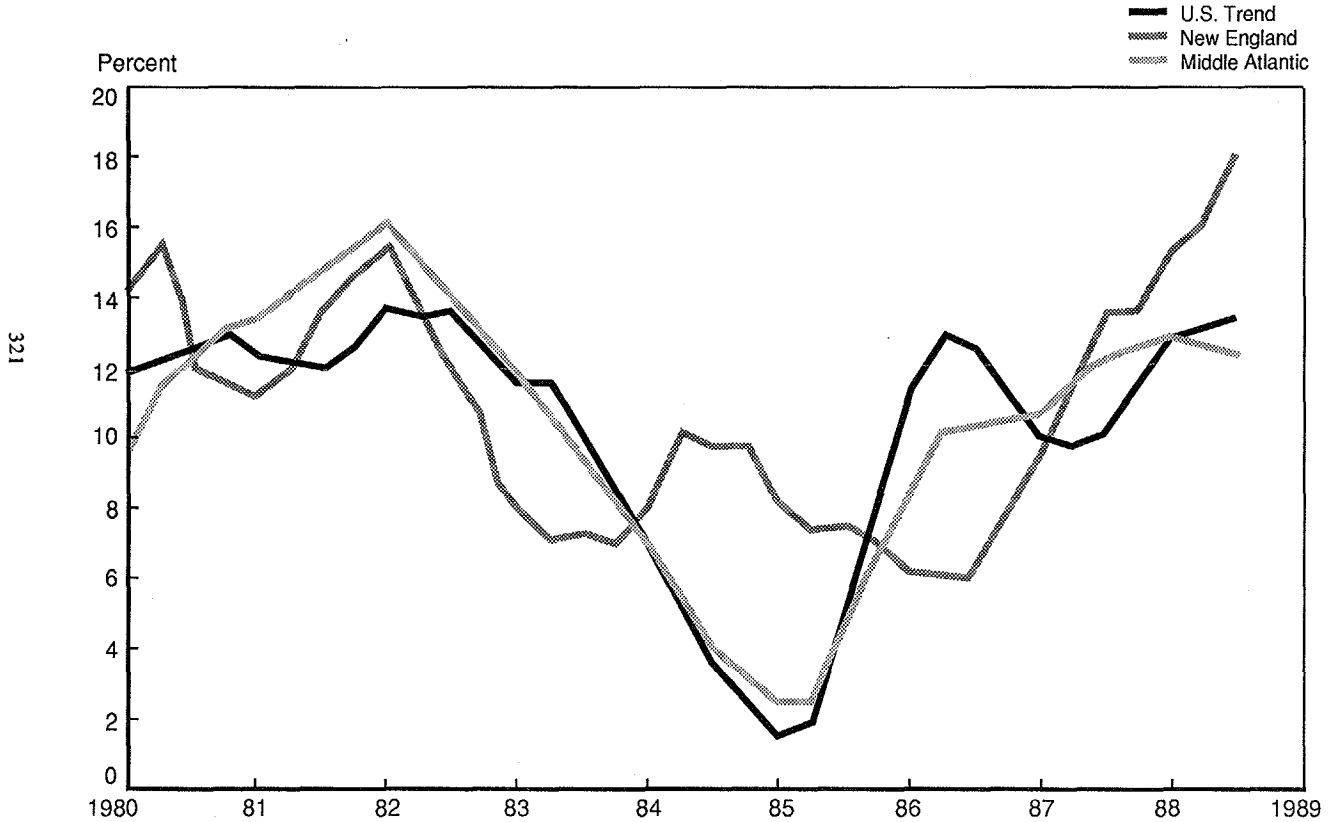
We also have to look at inflation. What's happening to the underlying rate of inflation? Is inflation going up? There are two schools of thought, currently. Inflation is going to remain relatively level or inflation is going to increase over the next couple of years. That is an important difference and it is a significant variable in projecting future trends.

One of the most significant variables, in particular on the hospital side, is what is happening to DRGs. What is Medicare doing? What kind of increase are they going to give the hospitals? Depending on the region of the country, Medicare represents anywhere from 30% to 40% of the total hospital payments. For every point they cut the hospitals, the hospitals are going to have to charge the other payors to make it up if in fact they want to maintain that revenue. Recently, we found that during 1988 one other variable has become important which historically had not been a significant variable. That variable is hospital payroll charges per full-time equivalent. Historically the CPI had been a fairly good leading indicator, a fairly good predictor of hospital payroll. We had a severe nursing shortage during the last couple of years and what we found in 1988 was a significant acceleration of hospital wages, but in the short term, we have to monitor closely what's happening here because it is a significant driving factor on hospital charges.

To illustrate some of the things I mentioned, Graph 1 represents the regional comparison from our historical model with the U.S. trend, the Mid-Atlantic Region and the New England Region. What we see here is that the Middle Atlantic Region has generally followed the national level fairly closely, historically from 1980. In contrast the New England Region, during the favorable trend period in 1984 and 1985, was actually going in the opposite direction. It never came down below 6% and now is accelerating rapidly towards the end of 1988. Part of the differences result from what Medicare is doing on the DRGs and its effect on different hospitals, differences in the inpatient utilization and outpatient utilization rates between the various regions, and also what the government control is doing to some of these hospitals' reimbursement systems. Massachusetts has gone to a system that's attempting to pay for uncompensated care, which has in effect increased hospital revenues substantially. I think we may be seeing some of that in this graph of 1988. What's interesting is we haven't yet seen in the Middle Atlantic Region a significant increase in hospital costs, at least in the HMOs and the Blue Cross and Blue Shield organizations.



**HEALTH INSURANCE TREND MODEL™**  
CMM Trends – Northeast region



HEALTH CARE TRENDS  
GRAPH 1

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Graph 2 shows hospital inpatient revenue-per-day trends. Historically, from 1974 it illustrates the effect of the cost shifting where we are measuring or trying to anticipate cost shifting. As you can see, from 1974 through 1983 the Medicare and non-Medicare revenues per day were at fairly close synchronization. There are some differences. One was a cost reimbursement system and the other is a mixed bag of cost reimbursement, charge reimbursement and per diems. With the introduction of the Medicare prospective payment system (PPS) at the end of 1983, you can see a rapid acceleration of Medicare payments per diem to the hospitals accelerating up to nearly 28% per day during 1985. This was a period when the hospitals were doing very well financially. PPS was initially very good for the hospitals. At the same time, we also had decreasing inflation during this period and the hospitals' bottom lines tended to further moderate the pressure on charges to other payors. The trends in revenue per day for non-Medicare are at historically low levels during 1985. Beginning with the second, third, and fourth years of PPS of the DRGs, you can see Medicare has really been squeezing down the average reimbursement per day to hospitals and at the same time the non-Medicare revenue per day has been accelerating. I think this is a very telling graph.

Graph 3 shows a couple of examples, a couple scenarios from the model full coverage comprehensive major medical (CMM) trends. You can see historically back to 1980, the peak in early 1982 and again we're showing a peak with a slight decline towards the end of 1988 with two different scenarios. Both are with either a moderating or a flat trend scenario. The upper and lower lines represent a 95% statistical confidence level for the upper and lower model, respectively, based on the statistics of the model.

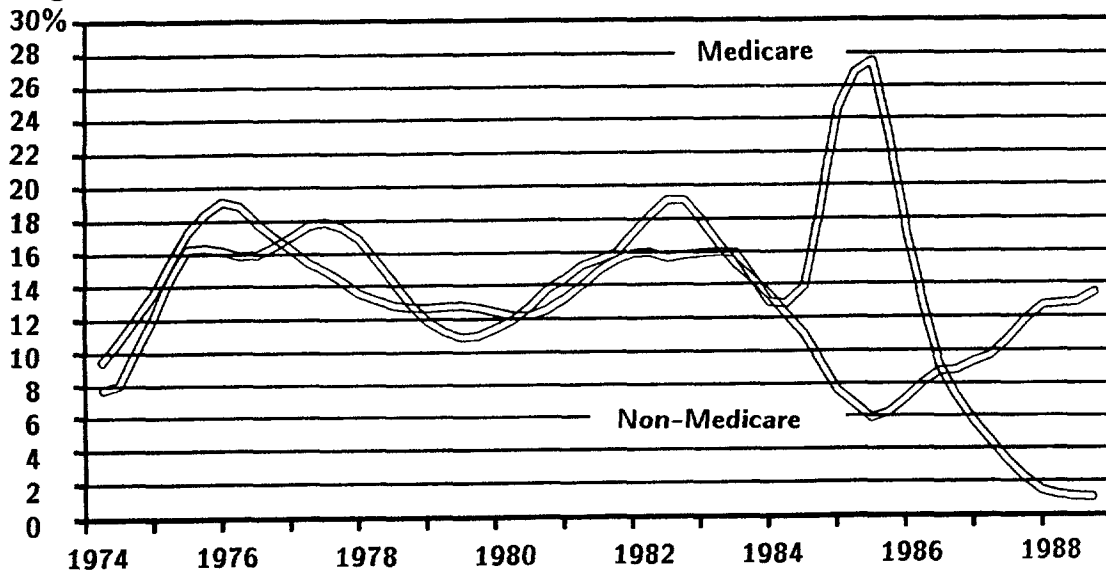
Why are the trend assumptions so high? Well, first I think we have always tended to react to rather than anticipate what's happening. We're behind what's happening. We have lags in our data, we have a long projection period where we have to make rates, we have management that doesn't want to believe that trends are going to change until you can show them proof. They don't want to start giving rate increases in 1985 and 1986 when everybody else is freezing their rates. Show me that somebody else is increasing their rates -- I don't know how many times I've heard that story, where actuaries are aware of what is happening but they can't convince their management that there is a need for change. The communication is an extremely important issue. I think we definitely have to change the cycle.

A second reason is we have extremely low surplus levels, at least on the health lines and certainly in the Blue Cross and Blue Shield Plans. But, with two to three successive years of losses, we may be trying to recoup past losses or we can't take the risk. We can't take the risk that the trends will continue to go up or that the trends will stay up where they are, producing a tendency to extrapolate increases. These things tend to be interrelated, but I've seen some examples where in some Medicare supplement filings a state insurance department has hired a consultant to review trend assumptions on Medicare admission rates for Part A deductibles. They took data from 1983, 1984, and 1985, applied ten different regression methods to the admission rates and took the one with the best fit and said "here is your trend going out to 1986 and 1987." Of course, they ignored the fact that PPS was implemented during that period and there was a significant intervention that caused admission rates to go down. They just extrapolated the continuation of substantial negative trends. I think there is a tendency to use techniques like that while ignoring the facts behind them.

A major part of trends is antiselection. I don't believe antiselection has any business in trends. It's not a trend. It's poor rating. You are not talking about apples and apples. If you turn over 30% or 40% of your business, you are not comparing the same set of data. You are not measuring the trend. I think our rating systems are causing part of the problem. In fact, Medicare's Health Care Finance Administration (HCFA) is actually doing a better job in learning about rating than our industry. They implemented risk base reimbursement to HMOs for the Medicare population. To avoid antiselection or to try to anticipate antiselection and adjust for it, they've been studying the impact of prior diagnoses on hospital admissions on the predictability of future claims for individuals. They've found that these prior diagnoses are much more significant than demographics in predicting future claims for an individual. I think it has a lot of potential in this industry, but we are lagging behind the federal government and I think that is a shame.

# HOSPITAL INPATIENT REVENUE PER DAY TRENDS

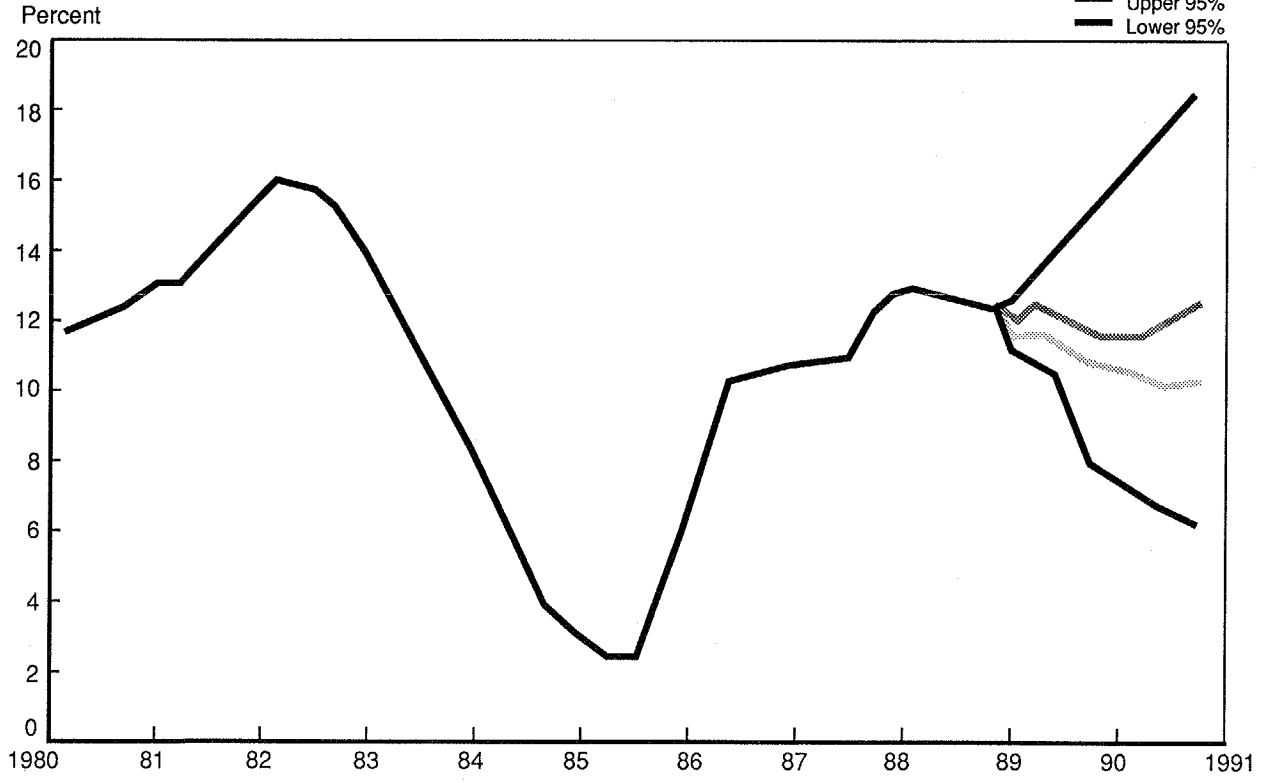
Annual %  
Change *12-Month Moving Average*



HEALTH CARE TRENDS  
GRAPH 2

**HEALTH INSURANCE TREND MODEL™**  
 Full coverage – CMM trends – Scenarios I & II

- CMM
- ▨ Scenario I
- ▧ Scenario II
- Upper 95%
- Lower 95%



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PANEL DISCUSSION  
 GRAPH 3

## HEALTH CARE TRENDS

Poor data is another issue -- there are exposure problems in counting and not controlling for mandated benefits. If chiropractic is mandated in a region or a state or the substance abuse riders have been added, they can add substantial amounts of claim costs. That is not a trend, that is a new benefit. It is an adjustment in benefit that needs to be taken out.

COBRA has shifted some costs in some trends from conversion back to the groups. Under the good economy we've had, it's probably reached its maximum impact during 1988. It can have further impact in future years if we have an increase in unemployment or other related shifts. But at least under the good healthy economic environment given the phase-in periods and length of time requirements for COBRA coverage, sometime during 1988 was probably the peak for that impact.

The cycle has been here for a long time. A lot of people do not want to believe it. I believe part of the cycle is really psychological. It becomes self-fulfilling because of what we do resulting from the marketing considerations. We don't react when we need to react. We don't anticipate, we wait and we wait and then that creates overreaction, which leads to bigger rate increases, which leads to a self-fulfilling prophecy of antiselection. Looking at loss ratios is also a problem. Trying to anticipate what's happening to the revenue side and trying to interpret that is very difficult. One of the interesting things that we have found related to this issue is we've studied a large portfolio of group business for a Blue Cross plan, at least ten years of success of group experience, and the plan has a fairly substantial discount so they have fairly low lapse rates -- a very high persistency in their business. We have a good track record of tracing groups over history without a lot of ins and outs. When we segregate that business by size and we look at their trends relative to the average, and we look at the groups that have trends 10% higher than the average and groups that have trends 10% lower than average and those in between, and we follow them in the next year, invariably the groups that have the high trends in one year have much lower-than-average trends in the successive year and vice versa. The groups with the low trends have high trends. Now if your credibility formulas are too high, and this applies to all sizes of groups, or if you're not selecting out which groups are the good ones, and you give large rate increases and scare off the ones that had the high trends this year, they are not going to be in your portfolio to have low trends next year. At the same time, you are going to keep the ones that have the low trends this year because you are going to give them lower-than-average rate increases and they are going to create higher-than-average trends next year.

Graph 4 is a history of Blue Cross and Blue Shield underwriting gains and losses for three-year cycles beginning in 1965. It represents underwriting gains and losses as a percentage of net revenue. As you can see, every year since 1965 has conformed to this cycle. We have four periods of three years of gain, four periods of three years of loss. What's interesting is that the loss periods are getting bigger, the trend is accelerating, and the gain periods are not recovering the levels of the loss periods. What this implies is that Blue Cross and Blue Shield surplus levels have declined as a percentage of revenue over this period of time. In fact, they have declined substantially. At the same time, this implies that there is a need for increased surplus because of the significant increase in the underwriting cycles. We have got a very serious situation. The same thing is happening in the commercial industry, but here it is illustrated very well. What's also interesting is if you think about each of the last three down cycles, self-insurance seems to accelerate, so you have less insured business to recoup your losses on. If more businesses switch to self-insurance during the period after the loss cycle, it's much harder to recoup the losses you've generated in the previous three-year period.

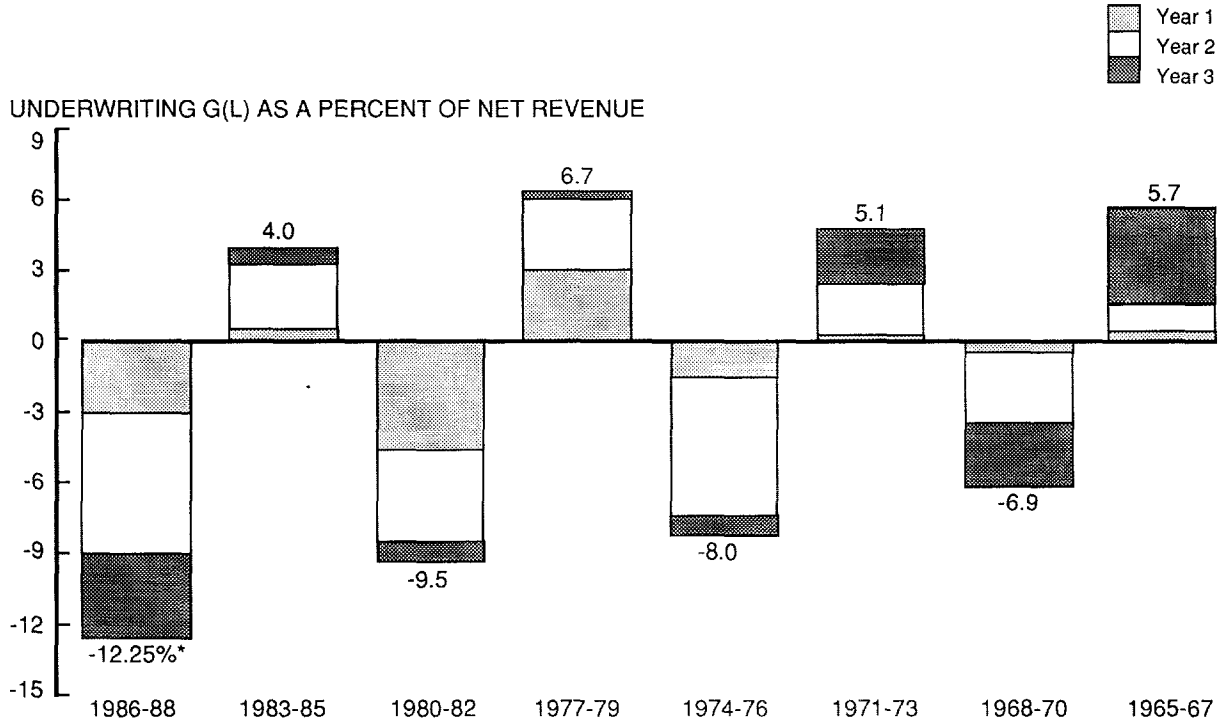
Comparing the Blues' gains and losses and the commercial carriers' gains and losses as reported in Graph 5, the Blues' numbers reflect investment income, and the commercials do not. The commercials also obviously include some disability income that is reported in their health insurance lines. The patterns are extremely consistent. In fact, the cycles are almost identical and they're plotted against the Trend Model, which shows that the peaks in the gains correspond with the low points in the underwriting cycle to the maximum loss periods. Now obviously, if we were doing a good job at anticipating the trends, we wouldn't have these underwriting cycles as dramatic as they are.

What are the basic techniques that are being used in estimating trends? Retrospective is the first. What are the trends now? Let's use that and that's what we will project forward into the future. Anticipation using scenarios or using some kind of method to look at external variables that can project your trends forward is the second major technique. Judgment is the third and oftentimes

# BLUE CROSS/BLUE SHIELD UNDERWRITING CYCLES

3-year cumulative gains/losses

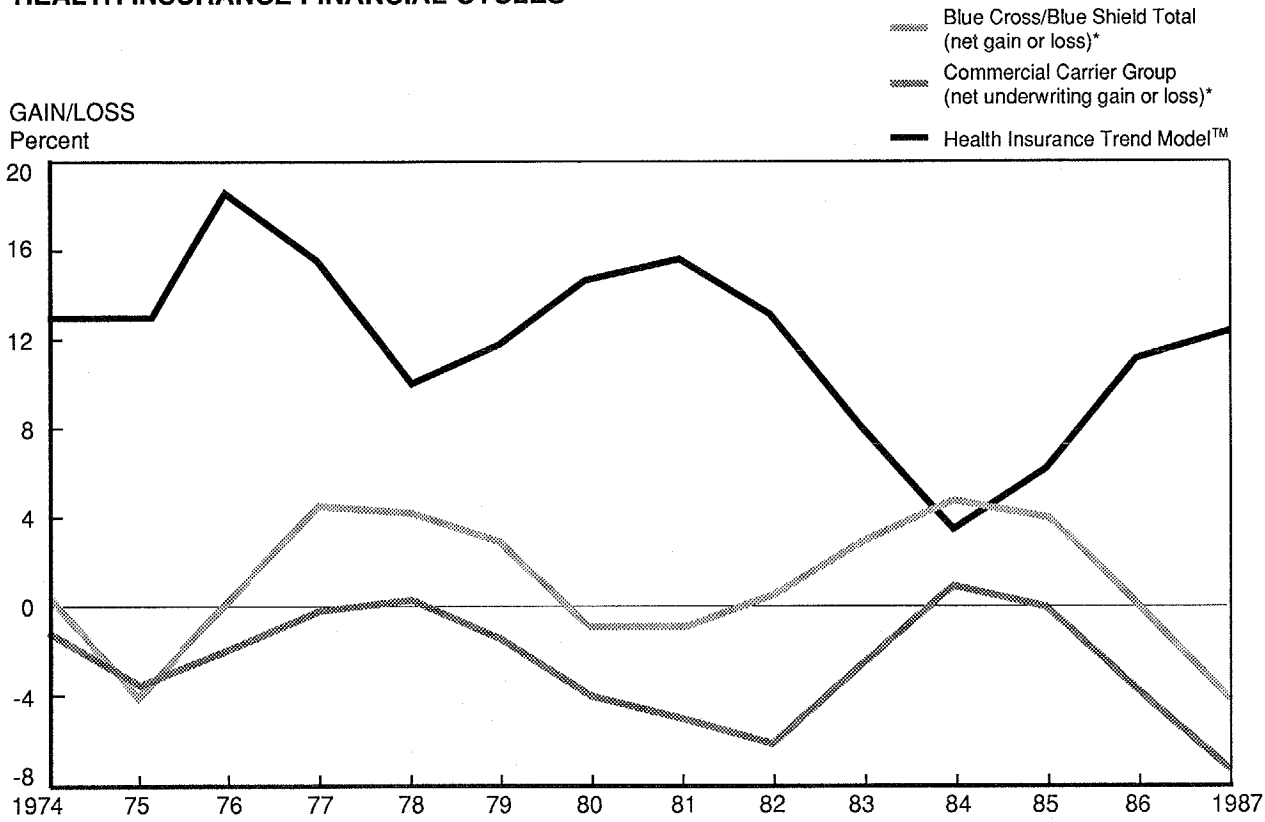
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PANEL DISCUSSION  
 GRAPH 4

\* Preliminary estimate

# HEALTH INSURANCE FINANCIAL CYCLES



HEALTH CARE TRENDS  
GRAPH 5

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Source: Argus Charts of Health Insurance

## PANEL DISCUSSION

it is used in conjunction with the first two. For example, you could use the current trends -- maybe they're 17% but you think they are going to go up so you use 20% or you can't afford to risk that; they might be 20% so I use 22%. Or you can do a survey of 25 carriers and see that their range is 22-25% and pick 24%. I think that ignores the implication of the cycle and that's what leads to a self-fulfilling prophecy.

The implications of these methods are both financial and marketing; they're surplus-related and they are market-share-related. In terms of the surplus and risk taking issues, the retrospective technique, at least historically if you believe the cycles, is the highest risk and the most volatile from a financial standpoint. Obviously, anticipating your trends or getting closer to your trends provides the lowest risk from a surplus standpoint or from a financial standpoint. Just to illustrate the impact of the retrospective trend method, Graph 6 takes our Trend Model and a 21-month lag on trends to project what the trends will be 21 months forward. I picked 21 months because projections are going to be 16 to 18 months minimum in terms of developing the rates for the group and compounding them forward, plus it has got to take at least three to five months to understand your data and decide there is a change and factor it into the rating formulas. I chose 21 months and I took that trend and I subtracted it from the trend 21 months later and looked at the gain or loss, the surplus or deficit, in the trend estimate. I plotted that against the Blues' underwriting gains and losses from 1976 and invariably the trend deficit using the retrospective method corresponds to the underwriting gain and loss during that period except for one year in 1977 where it had a small deficit in the opposite direction. This is certainly within statistical tolerance I would think.

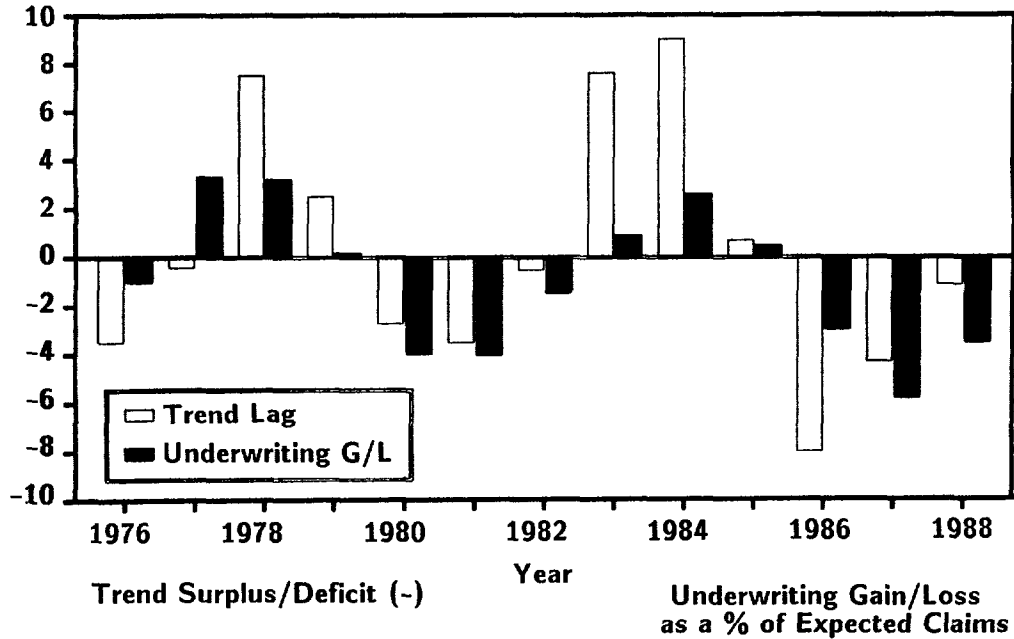
What about market share? I think the common wisdom is that the retrospective method, at least this is the way our managements appear to operate, is the least risk. Let's wait for somebody else to do it, we don't want to jeopardize our market share, we'll move with the crowd. Apparently, the wisdom is that anticipation is the most risk. The group's tendency to shop increases with the level of the rate increases that are seen and the same with individuals within the groups. So if you are putting 30% rate increases in a group, more people are going to look at the HMO. That is common nature. There is a fair amount of inertia at low levels of rate increase. But the higher the rate increase, the easier it is to overcome that inertia. Once a group begins to look, they can find ten different carriers easily that are going to have lower rates than you can offer. However, at a time when carriers are freezing rates, I think you can get away with a 5% rate increase. There might be some resistance, but on the other hand, you are going to be 5% better off financially if you can do it at the end of the year and you are going to need 5% less of a rate increase in the succeeding year.

What we've really got is to find out how to balance the issue of profitability and market share. What is the appropriate value of each? What's the marginal impact of rate increases versus market share? I don't think you can wait until we are through this next cycle to educate your management because you have got to begin to educate them now. You have got to study this phenomenon and begin to educate them so you have the flexibility to get them and convince them to move when it is appropriate. One strategy is to expect to lose market share at the end of the in period and target market share growth at the end of the losses. I believe you can generate enough surplus and profit during that period to more than offset any problem you would have with your expense and retention margins through the loss of enrollment. In fact, I have one client who actually worked on this strategy over the last three years strictly on their health business.

One issue is surplus and surplus management. If you can find a way to reduce the surplus needs of the group health lines through doing a better job of trend anticipation and trend analysis, that should make your managements happy. What I found is that a number of my clients in the Blues have begun to increase their investment risk through purchase of long-term bonds and higher investment in the stock market, which is actually at the time when their surplus needs are increasing because of the underwriting cycle. They're increasing their surplus needs on the investment side and I'm not sure they really understand the trade-off. The marginal impact of additional investment income in a short-term liability business is probably not worth the trade-off. I don't know that anyone has studied it, but I think it should be studied for anyone who is interested in doing that. On the other hand, if you can reduce your risk from the underwriting cycle, you can afford to take more risk on the investment side, if that is something of interest to you or your corporation.



# TREND LAG vs. UNDERWRITING GAIN/LOSS



HEALTH CARE TRENDS  
GRAPH 6

## PANEL DISCUSSION

MR. DAVID WILLIAM DICKSON: I noticed that your model appears to track the increase, the trend itself, rather than track the baseline components -- like days per 1000, cost per day.

MR. COOKSON: The model is composed of utilization intensity and cost by 20 different components of health care claim costs.

MR. DICKSON: And then you back into the trend after you projected those?

MR. COOKSON: Right, we put them all together using a compositing technique based on our guidelines and then develop the aggregate trends. We do look at them separately for hospital in and out and then wrap-around for each of those two hospital products.

MR. DICKSON: Okay. I had noticed your model always shows just the trend itself rather than the increase in the components. That was at least one thing that we changed at Blue Cross of Texas about four years ago. They were trying to model the increase rather than model the components. I think you can get fooled by just saying, "okay, we have a trend cycle and at this point, we think the trends are going to go up and at this point we think the trends are going to go down." But you don't know how much unless you are looking at the components.

MR. COOKSON: Well, basically we do model all the components.

FROM THE FLOOR: Could you define exactly what your trend is composed of? Maybe you could explain some of the variations you found among companies so everybody just doesn't run off and say they understand the trend is really running down to ten because they assume that you found some substantial variations among companies as well as among products of different sizes. I would assume that there are substantial variations out there with trends.

MR. COOKSON: There are extremely substantial variations. Our basic data is based on national data bases reflecting hospital information, physician information, drug costs, and prescription drug payment levels which we then use. We do a lot of processing of this information, probably ten different sources that come into this. They're not intended to be insured sources. They are intended to be total population. That is our objective. We then use these to compare to insured experience. We have found in aggregate in many cases that the insured's patterns are very similar to the model. What we have found is if you look at blocks of business within a carrier, you may see the small group business with 30% trends and large group business with 14% or 15% trends. Again, I believe that is due to antiselection, but there are substantial differences and there are substantial differences between carriers. I think the important thing is to really understand what's in the carrier data because of the issues of antiselection, mandated benefits and related things.

FROM THE FLOOR: So a 24% trend could be correct for the companies for which the survey was taken compared to your trends which are down in the teens.

MR. COOKSON: It is possible if you assume antiselection is a trend.

FROM THE FLOOR: Do we have a choice? Suppose we got a group in and there is HMO penetration and we think people are going to be switching over to COBRAs and things like that. We know we are taking a block of business that existed last year or a group that looked like last year. We know the real trend for the medical component -- let's say including utilization, everything else -- may be 10-15%. But then somehow we have to add those other factors on top of it.

MR. COOKSON: Well, you have to add those other factors, but they are not uniform by group. Some groups may be subject to those kinds of antiselection factors and they may be two to three times the factor and other groups may have little impact. But by building it into your trend, you really are building it into the groups. You are penalizing the groups that you really want to keep rather than the groups that you want to give. You are creating additional pressure for antiselection.

FROM THE FLOOR: Well, I agree with that 100%. I was just pointing out that we still have to add something for the uncertainty of not going within a group. How much of that is going to happen?

## HEALTH CARE TRENDS

MR. COOKSON: Some people are actually developing rating systems or rating approaches that look at the potential for HMO penetration in a particular group. They will have loadings for rates where groups are going to have open enrollments and HMOs and lower trends for groups that aren't.

FROM THE FLOOR: John, you are sort of advocating at this point in time that if we think the trend is going to be reversing, we should essentially lower our trends.

MR. COOKSON: Only if you have surplus.

FROM THE FLOOR: Assuming that the surplus has been depleted, if we take that attitude at this point in time, then our surplus is never going to get back up to the levels that we need.

MR. COOKSON: That's right. Well, with 22% trends, I think within the next couple of years the surplus will get back up to some extent. But, I don't think if your surplus is depleted you are in a position to take that kind of posture. What I'm now saying is if this process continues again, two years from now, three years from now, if you've had good financial results, you don't want to be in a position of not being able to begin to react again when the trends begin to start back up.

MR. RUSSELL HENRY: Some of us are concerned that maybe the cycle will not follow its past pattern. In your opinion do you expect the three-year cycle to continue as it has in the past?

MR. COOKSON: I don't know that it will be three years. It is a stochastic process and I think that we have just been lucky that consistently it has been three years. I don't feel that trends are going to decline as much over the next couple of years as they have in past cycles. I think that there is going to be moderate decline and maybe a flattening out. Then depending on what HCFA does for Medicare, both on the inpatient side and the physician side, I think it is going to really affect where the trends are going to be two years from now. The second thing is there is some significant economic thought that inflation is going to increase over the next couple of years, which will then be pushing the typical countercyclical cycle. So we have to watch what's happening with inflation. I think the financial results will improve over the next couple of years and I think people have already begun to see better financial results, at least for a few quarters. Given the high level of trends, basically my theory is that when trends get so high, the groups can't select enough against you to overcome. No matter where they go, the rates are going to be adequate. So that even if you are still shifting your portfolio, they are more likely to come in at adequate rates and you are going to be making money over the next couple of years. I don't think the trends at least at this point are going to moderate as much as they have in the past though.

MR. TED L. DUNN: Do some of the basic things you put in this model relate to charges or to costs of hospitals?

MR. COOKSON: Revenue is a blend of charges and reimbursement from other providers. That's why a fee-for-service or a charge-based carrier is going to have a somewhat higher trend than the model.

MR. ANDERSEN: I have the experience of Blue Cross and Blue Shield of Iowa, which represents about one million insured lives. The Blue Cross, for those of you who are not familiar with our plans, represents the hospital side of our business and you'll see that our cycles followed pretty much what John was showing in his graphs on a national basis. After that dramatic drop in inpatient utilization, you see that our cost trends dropped dramatically, actually went negative on the hospital side during 1985 and are back up again to around 10% trends on the hospital side today. We then split that trend and you can see inpatient utilization rates starting back in 1980 at 878 days per 1000 members, at which time we were paying \$261 per day for those units of care. It dropped off then down to the point where in 1986 we had 551 days per 1000. At that point we were then paying \$594 per inpatient day. The use rate has leveled out now. We are at 553 days in 1988, but we are now paying \$730 per day on the average. This is just in the state of Iowa. I think it is fairly representative of the type of movement that we have seen across the country. Now combining those two factors you get the annual charge per member going up from \$230 per member per year in 1980 up to the point where we are at \$403 per member in 1988. When you remove inpatient days, you provide the care someplace and you can see that we did that in the outpatient setting. These are outpatient hospital visits, where we started at 150 days per 1000 in 1980 and more than doubled that to the point in 1988 when we provided 331 visits per 100

## PANEL DISCUSSION

members. We had the cost per unit of service going in the same direction, moving from \$93 in 1980 to an average of \$247 per outpatient visit in 1988. I believe that represents a shift in the intensity of care in the outpatient setting as we've had mandatory outpatient procedures included in our benefit program. Now you look at the multiplication factor where you take the cost per unit times the number of units to show that in 1980 for the outpatient setting we were paying on the average \$14. There was a charge of \$14 per member in 1980; that now is at \$82 per member, representing an annual compounded rate of about 24% in the outpatient setting.

Then we looked at the other side of our business, which is the Blue Shield or the physician or professional component and you can see that the trend line looks almost the same. It didn't go down nearly as much as on the hospital side, so we didn't go into the negative point in 1985. But we did get down to about a 5% annual trend in 1985. We are back up to about 17% on the physician side and we haven't seen that turn yet. We keep waiting for John's prediction to come true that that's going to dip down. We split that trend into a different set of components where we examined cost and utilization trends by type of service for 1986, 1987, and 1988. In 1986, the x-ray and lab services represented 31% of our total payments on the Blue Shield side. We have broken that into two pieces, the charge per service and the service per member. For example, you can see that the charge per service increased 6% over what the charge was in 1985 and the number of services went to 8%. If you hear the medical community say "We hear about these high trends but we are not increasing our fees that much," they're right. Surgical fees were going up 11% and the number of services were going down slightly. Medicare care represents primarily office visits, which saw a 5% movement in their fee schedule, while they provide 13% more medical services. Anesthesia tracks pretty close with surgery as you would expect and there is not much variation in the OB area. You would think that in x-ray and lab and medical care they've probably gotten the number of services up enough, but if you look at 1987 compared with 1986, we saw another 11% increase in the number of x-ray and lab services performed and another 15% increase in the number of medical care services performed.

We have seen a number of examples of why those things would occur. You probably have heard about defensive medicine in the x-ray and lab area. We have seen cases where, instead of ordering a full battery of lab tests, they order three individual tests which cost us more than the full battery. The explanation was that they didn't want the other 20 tests in our files in case there was a malpractice suit because then they could say they didn't have them and that's why they didn't look at them, so if they don't order them, they don't have to defend their actions, at least that was their position, so we ended up paying more because we had more small services. Now on the OB side, you see a 12% increase for cost per service and that was reflective of the increases in the malpractice insurance rates that the physicians were experiencing. We thought they surely are now to the point where their revenue is up and they don't need to increase the number of services, but that wasn't true. Now we see another 16% increase in the number of services in the x-ray and lab area. So we don't know where the end is -- how many of these services can their patients absorb? Then you see on the medical care side another 9% increase in medical care services. I assume they are continuing to say, "Looks pretty good, but why don't you come back Monday and we'll see how things are doing?" Then we have another 15% increase in the charge level on the OB side, which I think is reflective of what has happened in the malpractice area.

**MR. COOKSON:** Dan, I think if you would have adjusted for the chiropractors, my prediction would have come true.

**MR. ANDERSEN:** There are factors in there; for example, John mentioned the mandated benefits. We haven't factored that out and we did have a mandated chiropractic benefit in Iowa. We did an analysis and concluded that about half of that increase in medical services in 1986 was reflective of the increased number of chiropractic services that we were paying for.

**MR. COOKSON:** Dan, have you looked at the impact on X-ray services due to the chiropractic?

**MR. ANDERSEN:** No we haven't. The amount of research you can do when you start to split your trends into pieces is almost infinite. There comes a point where you need to get back to the overall trend. Texas likes to split it into pieces, but I think sometimes you may overdo it by splitting it up into very small components. I have a theory that they are going to get it one way or another and you can split it out and analyze it to death, but one way or another there are these underlying trend factors that are driven by the need for income in the medical care delivery system.