



SOCIETY OF ACTUARIES

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**Actuarial soundness cont'd**

order to determine the actuarial balance, the method used should take into account interest earnings of the trust funds, the starting fund balance, and the target fund ratio.

One proposed method for combining the single-year rates is to divide the present value of the numerators (e.g., the dollar amounts of all years' incomes) by the present value of the denominators (i.e., the taxable payrolls). A second proposed method is to determine the arithmetic average of the 75 single-year rates. The present value method was used in the most recent OASDI Trustees Report, while the average method was used in the most recent HI Trustees Report.

Because the committees' goal is to arrive at a test for actuarial soundness that is generally accepted by the actuarial profession, we would be interested in comments on the proposed tests. It may be that more than one test would be generally accepted. We believe, however, that the test will be more effective the more widespread its support and that, once adopted, it should not be changed without a compelling reason.

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**SOA Annual Meeting**

Plan on joining more than 1,200 actuaries from across the country at this year's SOA Annual Meeting October 22-25 at the Marriott Marquis Hotel in New York City. Anyone who has not received the preliminary program can obtain a copy by contacting the Society Meeting Department at (312) 706-3540.

To plan ahead, below is a list of dates, locations and topics for the 1990 SOA Spring Meetings.

April 5-6, 1990 Dallas  
Health/Pension

April 30-May 1, 1990 Hartford  
Product Development/  
Financial Reporting

June 14-15, 1990 San Francisco  
Financial Reporting/  
Product Development

**Editorial****Refocusing our attention to HIV infection**

by Daniel F. Case

The number of AIDS cases reported in the United States during the first 26 weeks of 1989 was up 12% from the corresponding 1988 number. While this increase is much lower than the year-to-year increases of over 100% observed earlier in the HIV epidemic, we cannot expect the incidence of reported AIDS cases to peak within the next year or so. In early 1988 there was a bulge in reported cases, because the Centers for Disease Control (CDC) had broadened the surveillance definition of AIDS. Many cases that did not meet the old, narrower definition were counted for the first time. This reporting bulge, which lasted from late 1987 well into 1988, is still affecting the current period-to-period ratios of reported cases.

In June 1989 the U.S. General Accounting Office (GAO) issued the report, "AIDS Forecasting — Undercount of Cases and Lack of Key Data Weaken Existing Estimates." The report describes adjustments that the GAO made to 11 forecasts by various individuals or organizations (including two forecasts by the CDC). The GAO's adjustments reflected various undercounts (net of overcounts) inherent in the AIDS surveillance data that all forecasters used. In reviewing the CDC's 1988 (Charlottesville) forecast, the GAO adjusted the CDC's best estimate for cumulative cases through 1991 from 285,000 to something in the range of about 325,000 to 360,000.

These GAO adjustments do not mean that we should expect the impact of HIV infection to be significantly more severe than already anticipated. The GAO's adjustments reflect fatal HIV-related illnesses that have been occurring and will continue to occur but are not included in the CDC's count of AIDS cases. These noncounted illnesses include: (1) fatal HIV-related illnesses that are not included in the CDC's definition of "AIDS" for surveillance purposes, (2) illnesses of types included in the CDC's definition, but uncounted

because they were diagnosed as AIDS without the use of CDC-required diagnostic tests, and (3) illnesses acceptably diagnosed as AIDS but never reported to the CDC. The GAO described a fourth type of undercount, consisting of illnesses meeting the CDC definition but never diagnosed. The GAO made no adjustment for this last undercount, because it found no empirical data relating to the degree of undercount. In adjusting the CDC's 1988 forecast the GAO noted that the CDC had itself made adjustments for some types of undercount, but not necessarily large enough adjustments.

The main lesson from the GAO report may be that the impact of the HIV epidemic that the nation has been feeling and will continue to feel is greater than the impact previously identified as related to HIV. Certainly, the insurance business is aware that it has probably not been identifying all HIV-related claims. In estimating the past and future impact of the HIV epidemic on overall claim costs, some provision for undercounting should be made.

In addition to discussing undercount problems overall, the GAO report discusses undercounts by transmission category (e.g., heterosexual). It also discusses various trends, such as trends in reporting delays and "hidden" trends in transmission categories. These are worth careful study.

In some respects the forecasting, or projecting, of the financial impact of the HIV epidemic is becoming less difficult. Information on the incidence of AIDS cases, on the length of time from infection (or from test positivity) to AIDS, and on the prevalence of HIV infection in various population segments continues to accumulate. On the other hand, there are problems that continue to make forecasting quite difficult. The average length of time from infection to AIDS may differ from what has been observed among a few relatively small groups of individuals, and it may change over time

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### **HIV infection cont'd**

as the epidemic moves through various population segments. Not enough is known about the current prevalence of infection, the prevalence of various risk behaviors, and the probabilities of HIV transmission associated with those behaviors and with various stages of the progression of HIV disease in infected individuals. Also, and we may hope very significantly, various therapies are beginning to lengthen the survival of persons with AIDS (PWAs) and to defer the onset of AIDS among some infected persons.

With the increasing use of drugs to fight AIDS and HIV infection, the financial implications for the nation's healthcare systems become increasingly significant. Actuaries and others are grappling with these implications and with the overall problem of caring for PWAs.

It is important to get better estimates of the prevalence of HIV infection, both to improve the accuracy of projections of AIDS cases and to get a clearer picture of the size of the healthcare needs of HIV-infected persons who do not have AIDS. The importance of HIV-antibody testing for purposes of prevalence estimation, control of the spread of infection, and (relatively newly) treatment of infected individuals is becoming more and more widely recognized. Surveys are being conducted in various population segments. A national cross-section survey with reasonably unbiased results may be difficult or impossible to accomplish.

Life and health insurance companies have tested a great many individuals, many or most of whom do not belong to the population segments being tested by others. Laboratories testing for insurers have been making public some of the resulting data. These data benefit both the insurance business and the public at large. The more such data can be released (subject, of course, to strict confidentiality controls), the greater will be the benefit.

### **Renewal rating cont'd**

poorer-risk groups will stay. This adverse selection process leads to the classic "assessment spiral" of yearly rate increases. Once a company reaches this stage, not only is it difficult to make money, it becomes difficult to break even on this block of business, no matter how high future rates are set.

#### **The solutions**

Over the past five to 10 years, companies have responded to this problem in various ways, including all or some of the following (where not previously used):

- Demographic rating
- Experience analysis
- Medical underwriting

Demographic rating, including at least age and sex rating, enables a company to determine rates in such a way that groups with more favorable risk characteristics (i.e., a lower average age or a higher percentage of males) get lower rates, while those with less favorable risk characteristics get higher rates. The rates may either be locked in for a year or vary month to month as people enter and leave the group.

Experience analysis can take several forms. One form is to apply the company's experience rating formula, typically applicable to large groups, to small groups as well. Over the past 10 years, the size of the group to which the experience rating formula applies has been declining. Although the smallest group to which the experience rating formula applies

now is typically 50 lives, some companies use the formula below 50 lives. Although a credibility factor of less than 100% is normally applied to a group's own experience, and this result is then coupled with some overall pooled experience, the key is that the group's own experience counts to some degree in determining future rates. The tendency — largely marketing-driven — has been to give more credibility at a given number of lives than is truly warranted based on pure statistical considerations.

Another form of experience rating is known as "tiered rating." Under this approach, an overall rate (perhaps demographically adjusted) is determined for the entire small-group pool, and then each group is assigned to a certain tier — either above or below the standard level — based upon its own experience. A loss ratio approach is the most common for assigning groups to specific tiers. Although companies use differing numbers of tiers, three to six tiers is fairly standard. The difference in rates from the lowest to the highest tier can be as low as 30% or as high as 100% or more. Often, carriers limit the number of tiers by which a group can move — either upward or downward — each year. Although many companies will move a group only one tier per year, others will move groups more than one tier. Some companies limit downward moves (to a lower rate level) more narrowly than upward moves.

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### **Seminars on exams**

Georgia State University will sponsor examination preparation seminars between October 2 and November 3 on the following courses:

110 140 162  
120 150 165  
130 151 EA2  
135 160 210

For further information, contact Robert W. Batten at his *Yearbook* address, or by telephone at (404) 651-2736.

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The University of Waterloo will conduct examination preparation seminars between September 27 and

November 4 in Waterloo and St. Louis on the following courses:

140 161 220 361 441 562  
150 162 320 362 445  
151 165 342 364 522  
160 210 343 440 542

For further information, contact F. G. Reynolds at Box 773, Waterloo, Ontario, N2L 3C1, or by telephone at (519) 886-5232.

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The University of Toronto will conduct examination preparation seminars for the November exam period in various locations on Courses 120, 130, 135, 140 and 150. For more information, contact Professor S. Broverman at his *Yearbook* address.