

THE FINANCIAL IMPLICATIONS OF AIDS
FOR INDIVIDUAL DISABILITY INSURANCE
IN THE UNITED STATES

TASK FORCE ON THE FINANCIAL IMPLICATIONS OF AIDS*

EXECUTIVE SUMMARY

The Committee on Valuation and Related Areas Task Force on the Financial Implications of AIDS was given the charge:

to examine and report on the principles and techniques for the financial recognition of AIDS (Acquired Immunodeficiency Syndrome) by insurance companies, recognizing both statutory and GAAP accounting.

The scope of this charge included the examination of methods of reserving, consideration of the possible need for a new valuation table, and the role of the valuation actuary.

The scope of the Task Force's research was limited to individual life insurance and individual disability insurance in the U.S. This report addresses individual disability insurance. Individual life insurance is addressed in a separate report, titled "The Financial Implications of AIDS for Life Insurance Companies in the United States" published July 1989, herein referred to as the "Individual Life Report" (see page 639).

This report should be viewed as a supplement to the Individual Life Report. Many of the issues and conclusions in the Individual Life Report are equally applicable to individual disability insurance and are therefore not discussed herein. The reader of this report is encouraged also to read the Individual Life Report.

Conclusions

The following are the conclusions reached in this report:

1. Nothing in this report should substitute for the valuation actuary's judgment regarding his/her own company's situation. This report can be a starting point for the valuation actuary's analysis. The valuation actuary should use any factors or methods he or she deems most appropriate.
2. Based on information available at this time, the middle scenario of the report by the SOA Committee on HIV Research is the most plausible projection of new AIDS cases in the general population and their mortality rates for examining the effects of

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AIDS, or more specifically HIV, on individual disability insurance. However, the other scenarios presented in the report cannot be rejected as implausible. The valuation actuary may deem other scenarios to be appropriate as well.

3. HIV will increase the disability incidence rates, and the average time on claim for HIV-related disability claims is likely to be longer than for non-HIV claims for most elimination-period and benefit-period combinations. Drugs such as AZT are likely to increase the financial cost of AIDS on individual disability insurance by lengthening the average time on claim for HIV-related claims without necessarily reducing the incidence of HIV-related claims.
4. The Task Force has developed HIV-related claim cost rates for individual disability insurance based on the general population model of the SOA Committee on HIV Research. Based on the Task Force's intercompany study, we recommend that the AIDS new case rates be multiplied by the following factors to approximate HIV-related disability incidence rates:
 - 50 percent for business issued prior to 1985,
 - 100 percent for untested business issued in 1985 and later years, and
 - 75 percent for tested business issued in 1985 and later years. The AIDS new case rates are first adjusted to exclude cases resulting from infections prior to the year the business was tested for HIV infection.

In order to understand the derivation and limitations of the factors, we suggest a thorough reading of Section 2 before using these factors. As more experience becomes available, these factors can be updated. These factors should not be used if an individual company's experience is sufficient for development of its own factors.

5. It is appropriate that the valuation actuary consider additional adjustments to the above HIV-related claim costs to reflect differences due to geographic distribution of business, antiselection due to product line and underwriting characteristics, differences in expected lapses between HIV-infected and uninfected policyholders, and other factors which the valuation actuary deems appropriate.
6. The claim continuance patterns of HIV-related disability claims and non-HIV claims are significantly different. In the aggregate for a developing block of HIV-related claims, there is most likely a growing redundancy in disabled life reserves if they are based on non-HIV claim continuance experience. The actuary should recognize that such disabled life reserve redundancy may be available to offset part of any additional active life reserve needed to anticipate future HIV-related disability claims.
7. The Society of Actuaries is encouraged to continue its efforts to produce timely and detailed intercompany HIV-related disability studies in order to gain more data on the incidence of HIV-related disabilities, the likelihood of recovery, and the impact of drugs such as AZT and other treatments on claim duration and to obtain HIV-related claim costs by issue age and policy duration. These data will allow more refined analyses than those provided in this report.
8. A new valuation table recognizing the impact of HIV need not be constructed at this time. The marked variation in projected HIV-related cases by calendar year and

geographical area and the insufficiency of data, together with the long period needed to develop, gain approval of, and introduce a new table even if sufficient data were available, suggest that there are more effective and immediate means of providing for HIV-related disabilities at this time.

Acknowledgments

The Society of Actuaries Task Force on the Financial Implications of AIDS was formed in June 1988. The Task Force was formed under the auspices of the Committee on Valuation and Related Areas (COVARA). COVARA is chaired by Robert W. Stein and was under the supervision of SOA Vice President R. Stephen Radcliffe until October 1989 and now is under the supervision of Michael Winn.

The Task Force is made up of the following members: Robert W. Beal, David J. Christianson (Chairperson), Harold J. Deutscher, Ardian C. Gill, William C. Koenig, Thomas W. Reese, and Paul E. Sarnoff.

In addition, several others made important contributions to the task force. These include the following persons from the SOA Committee on HIV Research: John B. Dinius, Walter H. Hoskins, Harry H. Panjer, Thomas W. Reese (Chairperson), and Harry A. Woodman (former Chairperson).

Several other important liaisons were established through the following: H. David Allen, Canadian Institute of Actuaries; Ted Becker, NAIC EX5 Life and Health Actuarial Task Force; Stephen A. Clairman, Canadian Institute of Actuaries; Robert J. LaLonde, American Academy of Actuaries Financial Reporting Principles Committee; John O. Montgomery, NAIC EX5 Life and Health Actuarial Task Force; and Anthony T. Spano, American Council of Life Insurance.

Other persons who made key contributions to the committee include: Jay D. Biehl, William W. Carter, Mark J. Chartier, Sam Gutterman, John E. Hanrahan, David M. Holland, Barbara J. Lautzenheiser, David W. Libby, Jeffrey S. Marks, Robert G. Meilander, and Jon K. Wilbur.

INTRODUCTION

The Task Force was appointed pursuant to a recommendation of the Report of the Society of Actuaries Task Force on AIDS, issued in March 1988 ("the Holland Committee"). The Task Force had the following charge:

The charge of the SOA/COVARA AIDS Task Force is to examine and report on the principles and techniques for the financial recognition of AIDS by insurance

companies, recognizing both statutory and GAAP accounting. Techniques may include both reserving and development of new valuation tables. The role of the valuation actuary is also to be considered. The purpose is to recommend actions to be taken by individual actuaries, regulators, actuarial organizations and other interested parties.

The research conducted by the Task Force was limited to individual disability insurance, which is addressed herein, and individual life insurance, which is addressed in a separate report titled *The Financial Implications of AIDS for Life Insurance Companies in the United States* published July 1989, herein referred to as the Individual Life Report (see page 639). Both reports apply specifically to the U.S. Many of the principles and issues with respect to the financial implications of AIDS for life insurance are applicable to individual disability insurance and therefore are not repeated in this report. This report should be viewed as a supplement to the Individual Life Report.

1. EFFECT OF AIDS ON INDIVIDUAL DISABILITY MORBIDITY

1.1 Impact of AIDS on Individual Disability Insurance

During the progression of AIDS from infection to death, there will be some point in time, depending upon the individual and the developing symptoms, at which an HIV-infected person will be unable to carry out the duties of his or her occupation. Those people covered by individual disability insurance will most likely be contractually disabled at this time.

The AIDS-Related Claims Survey of the American Council of Life Insurance (ACLI) and the Health Insurance Association of America (HIAA), dated September 1989, indicated that individual disability AIDS claim payments were 0.7 percent of total claim payments in 1986, 0.8 percent in 1987 and 1.2 percent in 1988. If this survey compared new AIDS claims to total new claims, these percentages would probably be higher. However, the survey does illustrate the increasing impact that AIDS is having on individual disability insurance.

The Task Force believes that AIDS new case rates for the individual-disability-insured population should be lower than for the general population. Generally accepted reasons for this relationship include underrepresentation among insured lives of IV drug users and underwriting that screens out most of those already infected.

The relative financial impact of AIDS on individual disability insurance will not necessarily be the same as for individual life insurance. The homosexual/bisexual population may not be as underrepresented in the individual-disability-insured population as in the individual-life-insured population.

Whereas it is generally believed that the homosexual/bisexual population may be less inclined to purchase life insurance than the heterosexual population, the same cannot necessarily be said about the purchase of individual disability insurance, a living benefit which covers a personal financial need.

For individual life insurance, the use of drugs such as AZT will reduce the financial cost of AIDS as lives are prolonged. For individual disability insurance, the impact of AZT is uncertain. AZT will prolong the lives of HIV-related disability claimants, but may not improve their condition sufficiently to allow their return to work. On the other hand, recent research concluded that the use of AZT may delay the onset of symptoms for HIV-infected individuals. This could reduce the incidence of new HIV-related disability claims over time.

An intercompany study of HIV-related individual disability claims published in the *Disability Newsletter*, DN-51, published April 1988, concluded that the mortality rates of these claimants were consistent with AIDS mortality rates in the general population. This mortality pattern leads to claim termination rates for HIV-related individual disability claims considerably different from claim termination rates for non-HIV-related claims. Until midway through the second year of disablement, the claim termination rates for the non-HIV claims are considerably higher than for the HIV-related claims. Thereafter, the claim termination rates for the HIV-related claims exceed the non-HIV termination rates.

Table 1A compares monthly claim termination rates for HIV-related claims and non-HIV claims. The monthly claim termination rates for the HIV-related claims are based on annual mortality rates of 40 percent, 40 percent, 35 percent, and 25 percent thereafter, which are assumed in the general population AIDS model described in Section 2.1. The claim termination rates for non-HIV claims are based on the 1985 CIDA Table.

As the result of this expected pattern of claim termination rates, the average time on claim for HIV-related claims will generally be at least as long as for non-HIV claims, depending upon the combination of elimination period and benefit period. Table 1B compares the expected time on claim for HIV-related claims and non-HIV claims given the expected monthly termination rates described in the last paragraph. The expected time on claim for HIV-related claims assumes disability occurs at the time AIDS is diagnosed.

The AIDS mortality rates appear to be declining as the result of liberalizations of the CDC AIDS case definitions and advances in drugs and other medical treatments. The 40 percent mortality rate assumed in the first two years of AIDS may be outdated already. Table 1C compares the expected

TABLE 1A
MONTHLY CLAIM TERMINATION RATE COMPARISON

Month of Disablement	1985 CIDA*		HIV- Related
	30-Day Elimination Period	90-Day Elimination Period	
4	0.3017	0.2132	0.0417
6	0.2115	0.1910	0.0417
8	0.1450	0.1450	0.0417
10	0.0873	0.0873	0.0417
12	0.0709	0.0709	0.0417
15	0.0545	0.0545	0.0417
18	0.0359	0.0359	0.0417
24	0.0181	0.0181	0.0417
36	0.0139	0.0139	0.0353
48	0.0092	0.0092	0.0237

*Male, occupation class 1, disabled at age 35 due to sickness.

TABLE 1B
EXPECTED TIME ON CLAIM (IN MONTHS)
FROM END OF ELIMINATION PERIOD
HIV-RELATED VERSUS NON-HIV CLAIMS

Benefit Period	30-Day Elimination Period		90-Day Elimination Period	
	HIV	Non-HIV	HIV	Non-HIV
2 yr.	15.0	3.7	15.0	7.0
5 yr.	22.9	5.3	23.2	11.7
To Age 65	28.4	28.4	28.9	33.1

time on claim for HIV-related claims based on the 40%-40%-35%-25% mortality assumption to expected time on claim based on a 35%-35%-35%-25% mortality assumption. The second assumption is not based on statistical data, although the Task Force believes AIDS mortality rates are decreasing. At present, it may be more conservative to use the second assumption, but ultimately it may be more realistic.

1.2 Claim Cost Margins in Current Valuation Tables for Active Life Reserves

A company's claim cost margins in its active life reserves are directly dependent on its anticipated levels of claim costs experienced, which vary widely based on underwriting and other considerations. Similarly, while overall tabular costs may exceed actual costs, this may not be true for all ages. The Task Force has concluded that only company management can

TABLE 1C
 EXPECTED TIME ON CLAIM (IN MONTHS)
 FROM END OF ELIMINATION PERIOD
 HIV-RELATED CLAIMS, TWO MORTALITY
 ASSUMPTIONS

Benefit Period	30-Day Elimination Period	
	Mortality Assumption No. 1 (40%-40%-35%-25%)	Mortality Assumption No. 2 (35%-35%-35%-25%)
2 yr.	15.0	16.1
5 yr.	22.9	25.3
To Age 65	28.4	31.7

assess the extent to which margins from one age are available (or can be made available) to pay claims at other ages.

Also, since the Standard Valuation Law does not make explicit provision for active life expenses, it implicitly assumes that other reserve elements (for example, interest, mortality or morbidity) are sufficiently conservative to take into account active life expenses when gross premiums approach minimum valuation net premiums. Given the certainty of extra HIV-related claims, the ability to recover expenses from claim cost margins is reduced.

A significant factor in the analysis of a company's claim cost margins is the estimated change, over time, in the estimated relative size of the infected and uninfected groups in an insured population. Such change is due largely to the expected higher lapses among insureds not infected and not at risk, compared to those infected or at risk.

The Task Force has concluded that no general statement of assurance can be given regarding the margins inherent in the present valuation disability table. There is no substitute for a thorough analysis of a company's potential extra HIV-related claim costs (as facilitated by the discussions within this report), plus a full understanding of current and expected non-HIV company disability experience. A gross premium valuation, with emphasis on annual cash flows, will demonstrate the extent to which HIV-related claims may or may not be absorbed by existing margins.

1.3 AIDS Morbidity Studies of Individual Disability Insurance Experience

Companies contributing data to the SOA annual studies of individual disability insurance experience have been requested to show AIDS as a specific cause of disability. This will provide the data needed for calculations of HIV-related claim cost rates by issue age and duration and will greatly

improve on the approximate methods of calculating HIV-related claim cost rates that have been used in this report. These studies will be particularly helpful in determining the effect of (1) antiselection on 1985 and later issues, (2) testing for HIV infection, and (3) selection through regular underwriting.

The Task Force recommends that steps be taken by the Society of Actuaries' Experience Studies Committees to speed up the process of collecting, compiling and presenting data on HIV-related claims so that the data are made available on a more timely basis. The SOA Committee on HIV Research has a specific interest in the collection of these data and may be able to assist. Additional companies should be urged to contribute data, at least on their AIDS experience, to these SOA annual studies so that a more complete cross-section of experience by size and geographical area of company can be obtained. Separate experience by HIV-tested and untested experience is also needed if available.

Finally, the Task Force recognizes that the industry will eventually require an updated statutory valuation table to be used for individual disability insurance. To support the appropriate development of the next valuation table, the Task Force recognizes that the efforts of the SOA to gather detailed and timely intercompany data through a standing committee are important. In this regard, the Task Force recognizes that AIDS mortality and morbidity are likely to vary considerably from year to year. Adjustments to morbidity data will likely be needed, depending on the course the AIDS epidemic takes, to reflect the appropriate underlying morbidity in the valuation table.

2. DEVELOPMENT OF HIV-RELATED DISABILITY CLAIM COSTS

This section describes the methodology used by the Task Force to develop HIV-related disability claim costs. First, a general population model was selected to project AIDS new case rates throughout the next several decades. From the model and the results of an intercompany study, HIV-related claim cost rates were developed. Finally, adjustments for geographic differences, as well as for antiselection by product and underwriting differences, are suggested.

The proposed methodology for estimating HIV-related claim costs for individual disability insurance, including adjustments for geographic and other company differences, is a primary feature of this report. However, the Task Force recognizes that more specific insured lives information should be used in making more accurate projections of HIV-related disability claim experience.

2.1 The Population Model

A starting point for analyzing the financial impact of AIDS is to estimate the future course of the AIDS epidemic. To that end, a general population model of HIV infections, AIDS cases and deaths was developed through a combined effort of this Task Force, the SOA Committee on HIV Research, and the ACLI-HIAA Ad Hoc Group on AIDS Data. The model, containing low, middle and high scenarios, is presented and analyzed in a report entitled "U.S. General Population Projected AIDS Mortality Rates," July 1989, prepared by the SOA Committee on HIV Research (see page 499).

The Task Force believes that the middle scenario of this general population model represents the most plausible basis for developing assumptions to be used in examining the financial impact of AIDS on an insurance company. Given the range of projections available, it appears to be neither pessimistic nor optimistic and is consistent with the data and projections of the U.S. Centers for Disease Control (CDC). Other scenarios may be plausible as well.

The model is explained and documented in the report of the SOA Committee on HIV Research. Certain key data from that report have been extracted and are included herein to assist in understanding the process adopted by the Task Force.

Table 2A displays projected AIDS cases classified by year of infection. Year-of-infection categories are presented for all years combined prior to 1986, for each year from 1986 through 1990, and for combined years 1991 and subsequent. This classification of cases can be used by the actuary to tailor financial analysis to an individual company, as described more fully in Section 2.3.

2.2 Derivation of Disability Claim Costs from the General Population Model

To develop AIDS disability claim costs from the general population model, two key assumptions were made:

1. A person becomes contractually disabled only upon development of clinical AIDS.
2. The person who becomes contractually disabled remains so until death.

The first assumption is the basis for developing the probabilities of insureds becoming disabled due to AIDS. In reality, it is not unusual for HIV-related symptoms developed prior to the diagnosis of clinical AIDS to cause insureds to be disabled. On the other hand, there are cases where insureds with AIDS have not become disabled for some time following the diagnosis.

TABLE 2A
 DIAGNOSIS FREQUENCIES FOR DISABILITY INCOME
 ANNUAL NEW AIDS CASES PROJECTIONS FOR MIDDLE SCENARIO

Year	Infected in Year						After 1990	Total
	Before 1986	1986	1987	1988	1989	1990		
1975	0	0	0	0	0	0	0	0
1976	1	0	0	0	0	0	0	1
1977	4	0	0	0	0	0	0	4
1978	18	0	0	0	0	0	0	18
1979	61	0	0	0	0	0	0	61
1980	185	0	0	0	0	0	0	185
1981	503	0	0	0	0	0	0	503
1982	1,236	0	0	0	0	0	0	1,236
1983	2,788	0	0	0	0	0	0	2,788
1984	5,777	0	0	0	0	0	0	5,777
1985	10,740	0	0	0	0	0	0	10,740
1986	17,702	0	0	0	0	0	0	17,702
1987	25,454	766	0	0	0	0	0	26,219
1988	32,560	2,487	677	0	0	0	0	35,724
1989	38,622	4,250	2,198	573	0	0	0	45,644
1990	43,375	5,917	3,756	1,862	523	0	0	55,433
1991	46,657	7,396	5,230	3,182	1,699	480	0	64,644
1992	48,411	8,617	6,538	4,430	2,903	1,560	413	72,873
1993	48,678	9,531	7,617	5,538	4,041	2,666	1,693	79,765
1994	47,582	10,112	8,425	6,452	5,052	3,712	3,769	85,105
1995	45,317	10,357	8,939	7,136	5,886	4,640	6,540	88,815
1996	42,120	10,283	9,155	7,571	6,510	5,406	9,861	90,906
1997	38,252	9,926	9,090	7,754	6,907	5,980	13,562	91,470
1998	33,976	9,335	8,774	7,699	7,074	6,344	17,468	90,670
1999	29,537	8,566	8,252	7,432	7,023	6,497	21,403	88,710
2000	25,146	7,679	7,572	6,989	6,780	6,451	25,217	85,833
2001	20,974	6,730	6,788	6,414	6,376	6,227	28,773	82,282
2002	17,146	5,771	5,949	5,749	5,851	5,856	31,971	78,294
2003	13,742	4,844	5,101	5,039	5,245	5,374	34,749	74,095
2004	10,801	3,983	4,282	4,321	4,597	4,817	37,077	69,878
2005	8,326	3,208	3,521	3,627	3,942	4,222	38,953	65,799
2006	6,296	2,532	2,836	2,982	3,309	3,621	40,398	61,974
2007	4,671	1,959	2,238	2,402	2,720	3,039	41,452	58,482
2008	3,400	1,486	1,732	1,896	2,191	2,499	42,166	55,370
2009	2,249	1,105	1,314	1,467	1,729	2,012	42,599	52,656
2010	1,703	806	977	1,113	1,338	1,588	42,810	50,335
2011	1,171	577	713	828	1,015	1,229	42,857	48,389
2012	791	405	510	604	755	932	42,789	46,785
2013	524	279	358	432	551	693	42,649	45,485
2014	341	188	246	303	394	506	42,472	44,450
2015	218	125	166	209	276	362	42,282	43,637
2016	136	81	110	141	190	254	42,098	43,010
2017	84	52	72	93	128	175	41,930	42,534
2018	51	32	46	61	85	118	41,784	42,177
2019	30	20	29	39	55	78	41,663	41,914

Infection Spread: 4,000,000 at risk, middle scenario to match CDC.
 Progression Rates: Weibull, median 10 years, alpha 2.1.

Section 2.3 describes adjustment factors to be applied to the resulting claim cost rates in this section. The adjustment factors are derived from an intercompany study (see Appendix) in which the actual incidence of HIV-related disability claims was compared to an expected incidence based on the first assumption. In effect, these adjustment factors correct for the oversimplification of assuming that all HIV-related disability claims are incurred upon development of clinical AIDS.

With respect to the second assumption that a person becoming contractually disabled due to AIDS remains so until death, an intercompany study of AIDS-related disability claims published in the *Disability Newsletter*, DN-51, April 1988, concluded that the mortality experienced by AIDS disability claimants tracked closely to the mortality experience of people diagnosed having AIDS in the general population. Occasionally HIV-related claimants do go off claim, but it should not be assumed that these instances represent long-term recoveries from AIDS. It appears reasonable to base the present values of future disability benefits for HIV-related claims on the post-diagnosis mortality rates from the general population model until future studies suggest otherwise.

AIDS new case rates were derived from the general population model. Table 2B shows male new case rates based on the general population model (middle scenario) for infections from all years. Note that the new case rates are a function not only of age, but also of calendar year. These rates increase by calendar year for several years due to the increasing yearly level of infection and the relatively long progression time from HIV infection to development of AIDS. Then the new case rates decrease by calendar year due to the assumed saturation of the high-risk population and the effect of education and changes in habit.

The incidence of HIV-related disability claims on female insureds has been insignificant to date. This report makes an implicit assumption that this trend will continue. Female HIV-related experience will need to be monitored regularly to determine whether this assumption should be changed in the future.

To derive HIV-related disability claim cost rates prior to the application of Section 2.3 adjustment factors, the new case rates are multiplied by the present value of disability income benefits at time of diagnosis. Table 2C provides the present value of benefit factors for five elimination periods (1, 2, 3, 6, and 12 months) and three benefit periods (2, 5, and to age 65). The present value factors are based on the postdiagnosis annual mortality rates of 40%-40%-35%-25% thereafter assumed in the general population model.

TABLE 2B

DIAGNOSIS FREQUENCIES FOR DISABILITY INCOME
MALE GENERAL POPULATION AIDS DIAGNOSIS RATES PER THOUSAND LIVES FOR MIDDLE SCENARIO

Calendar Year	Attained Age in 1986																		
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1986...				0.000	0.000	0.007	0.018	0.030	0.042	0.054	0.065	0.092	0.125	0.161	0.197	0.231	0.264	0.299	0.332
1987...			0.000	0.000	0.010	0.028	0.046	0.064	0.081	0.099	0.139	0.188	0.242	0.296	0.345	0.392	0.440	0.485	0.524
1988...		0.000	0.000	0.014	0.039	0.064	0.089	0.114	0.139	0.193	0.261	0.335	0.408	0.473	0.535	0.596	0.653	0.702	0.737
	Attained Age in 1989																		
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1989...	0.000	0.000	0.018	0.051	0.084	0.116	0.149	0.182	0.252	0.339	0.434	0.527	0.609	0.684	0.758	0.826	0.882	0.923	0.948
1990...	0.000	0.023	0.063	0.104	0.145	0.186	0.227	0.313	0.419	0.535	0.647	0.745	0.833	0.916	0.992	1.055	1.101	1.129	1.142
1991...	0.026	0.075	0.123	0.171	0.219	0.268	0.372	0.500	0.640	0.775	0.891	0.992	1.086	1.171	1.240	1.288	1.315	1.323	1.315
1992...	0.085	0.140	0.195	0.251	0.306	0.427	0.577	0.740	0.897	1.030	1.142	1.246	1.336	1.409	1.458	1.482	1.483	1.466	1.434
1993...	0.155	0.216	0.278	0.339	0.476	0.647	0.832	1.009	1.156	1.278	1.388	1.481	1.554	1.602	1.621	1.614	1.586	1.545	1.494
1994...	0.234	0.300	0.367	0.518	0.708	0.912	1.107	1.267	1.395	1.508	1.601	1.671	1.715	1.728	1.712	1.674	1.622	1.563	1.491
1995...	0.318	0.388	0.551	0.757	0.979	1.188	1.358	1.490	1.603	1.693	1.758	1.797	1.803	1.777	1.729	1.667	1.600	1.522	1.428
1996...	0.397	0.566	0.780	1.011	1.230	1.409	1.549	1.672	1.771	1.844	1.884	1.886	1.852	1.794	1.720	1.644	1.557	1.454	1.343
1997...	0.572	0.791	1.027	1.252	1.436	1.584	1.715	1.823	1.901	1.943	1.941	1.899	1.830	1.746	1.660	1.566	1.455	1.337	1.222
1998...	0.789	1.027	1.255	1.443	1.596	1.734	1.849	1.932	1.976	1.969	1.919	1.840	1.746	1.652	1.552	1.435	1.312	1.193	1.088
1999...	1.015	1.242	1.431	1.587	1.731	1.852	1.939	1.984	1.973	1.915	1.827	1.723	1.623	1.517	1.397	1.271	1.150	1.044	0.954
2000...	1.216	1.403	1.562	1.710	1.836	1.927	1.971	1.957	1.892	1.794	1.683	1.576	1.467	1.344	1.217	1.096	0.991	0.903	0.826
2001...	1.344	1.500	1.647	1.774	1.866	1.914	1.904	1.845	1.755	1.650	1.547	1.439	1.315	1.185	1.060	0.953	0.864	0.787	0.718
2002...	1.430	1.575	1.701	1.795	1.844	1.839	1.788	1.705	1.607	1.509	1.402	1.276	1.145	1.019	0.910	0.822	0.744	0.675	0.614
2003...	1.498	1.623	1.717	1.768	1.768	1.723	1.648	1.558	1.464	1.359	1.233	1.101	0.973	0.865	0.776	0.700	0.632	0.572	0.517
2004...	1.543	1.637	1.690	1.693	1.656	1.589	1.505	1.417	1.314	1.188	1.055	0.927	0.819	0.731	0.656	0.590	0.531	0.478	0.431
2005...	1.559	1.613	1.620	1.589	1.530	1.453	1.370	1.269	1.144	1.010	0.882	0.774	0.688	0.614	0.549	0.493	0.441	0.397	0.360
2006...	1.518	1.528	1.503	1.451	1.383	1.307	1.213	1.096	0.970	0.849	0.746	0.663	0.590	0.525	0.468	0.417	0.373	0.337	0.307
2007...	1.444	1.425	1.380	1.319	1.249	1.162	1.053	0.935	0.820	0.721	0.641	0.568	0.504	0.446	0.395	0.351	0.316	0.287	0.262
2008...	1.355	1.316	1.261	1.198	1.118	1.015	0.903	0.794	0.700	0.622	0.550	0.485	0.427	0.375	0.332	0.297	0.268	0.244	0.222
2009...	1.261	1.212	1.155	1.080	0.983	0.878	0.774	0.683	0.606	0.534	0.469	0.410	0.358	0.315	0.281	0.252	0.228	0.207	0.189
2010...	1.172	1.119	1.049	0.958	0.857	0.758	0.670	0.595	0.523	0.456	0.396	0.344	0.301	0.266	0.238	0.215	0.194	0.177	0.165
2011...	1.075	1.008	0.921	0.824	0.728	0.645	0.572	0.502	0.438	0.380	0.330	0.289	0.256	0.229	0.207	0.186	0.170	0.159	0.151
2012...	0.975	0.890	0.797	0.704	0.623	0.553	0.486	0.424	0.368	0.319	0.280	0.248	0.222	0.200	0.180	0.164	0.154	0.146	0.138
2013...	0.866	0.775	0.685	0.606	0.537	0.472	0.412	0.358	0.311	0.272	0.241	0.215	0.194	0.175	0.160	0.149	0.142	0.135	0.126
2014...	0.757	0.669	0.592	0.525	0.461	0.403	0.349	0.303	0.266	0.235	0.211	0.190	0.171	0.156	0.146	0.138	0.131	0.123	0.113
2015...	0.657	0.581	0.515	0.453	0.395	0.343	0.298	0.261	0.231	0.207	0.186	0.168	0.153	0.143	0.136	0.129	0.121	0.111	0.101
2016...	0.573	0.508	0.446	0.389	0.338	0.294	0.257	0.228	0.204	0.184	0.166	0.151	0.141	0.134	0.127	0.119	0.110	0.100	0.090
2017...	0.502	0.442	0.385	0.334	0.290	0.254	0.225	0.201	0.182	0.164	0.149	0.140	0.132	0.126	0.118	0.109	0.098	0.089	0.080
2018...	0.438	0.382	0.332	0.288	0.252	0.223	0.200	0.180	0.162	0.148	0.138	0.131	0.125	0.117	0.108	0.098	0.088	0.080	0.073
2019...	0.380	0.330	0.286	0.251	0.222	0.199	0.179	0.161	0.147	0.138	0.130	0.124	0.116	0.107	0.097	0.087	0.079	0.073	0.070

Infection Spread: 4,000,000 at risk, middle scenario to match CDC.

Progression Rates: Weibull, median 10 years, alpha 2.1.

Mortality after Diagnosis: immediate recognition at diagnosis.

Age/Sex Splits: 90% male, distribute by age at diagnosis.

Included Deaths: 100% of all years' infections.

The present value factors assume a 6 percent annual discount rate and reflect the probability of surviving from time of diagnosis to the end of the elimination period.

TABLE 2C
PRESENT VALUE OF DISABILITY INCOME BENEFITS PER \$1.00 MONTHLY
INDEMNITY DISCOUNTED AT 6.00%

Age at Disablement	Elimination Periods				
	1	2	3	6	12
To Age 65 Benefit Period					
15-45	23.19	22.26	21.37	18.94	15.01
46	23.18	22.25	21.36	18.93	15.01
47	23.17	22.24	21.35	18.92	14.99
48	23.15	22.22	21.33	18.90	14.97
49	23.12	22.19	21.30	18.88	14.95
50	23.09	22.15	21.27	18.84	14.91
51	23.03	22.10	21.21	18.79	14.86
52	22.96	22.03	21.14	18.71	14.78
53	22.85	21.92	21.03	18.61	14.68
54	22.70	21.77	20.88	18.46	14.53
55	22.49	21.56	20.67	18.25	14.32
56	22.20	21.26	20.38	17.95	14.02
57	21.78	20.84	19.96	17.53	13.60
58	21.18	20.25	19.36	16.94	13.01
59	20.34	19.41	18.52	16.10	12.17
60	19.16	18.22	17.34	14.91	10.98
61	17.48	16.55	15.66	13.23	9.30
62	15.06	14.13	13.24	10.82	8.22
63	13.67	13.04	12.44	10.82	8.22
64	13.67	13.04	12.44	10.82	8.22
Two-Year Benefit Period					
15-64	13.67	13.04	12.44	10.82	8.22
Five-Year Benefit Period					
15-59	19.90	19.06	18.26	16.10	12.62
60	19.90	19.06	18.26	16.10	10.98
61	17.48	16.55	15.66	13.23	9.30
62	15.06	14.13	13.24	10.82	8.22
63	13.67	13.04	12.44	10.82	8.22
64	13.67	13.04	12.44	10.82	8.22

AIDS Mortality Scenario:

Yr 1	0.40
Yr 2	0.40
Yr 3	0.35
Yr 4 +	0.25

For example, to get the unadjusted claim cost per \$1.00 monthly indemnity exposed for a male age 35 in calendar year 1989 with a 3-month

elimination period and to-age-65 benefit period, multiply the new case rate of 0.957 per 1,000 (from Table 2B) by the present value of benefits factor of \$21.37 per \$1.00 monthly indemnity (from Table 2C). The result is \$0.0205 per \$1.00 monthly indemnity.

As discussed earlier in this report, drugs such as AZT may have already reduced AIDS mortality enough to make the 40%-40%-35%-25% assumption inappropriate. We have included Table 2D, which provides present value of benefit factors comparable to Table 2C but with a lower AIDS mortality assumption, specifically, 35%-35%-35%-25%. This second table of present value factors will allow the valuation actuary to test the sensitivity of HIV-related claim costs based on lower mortality assumptions.

2.3 Basis for Adjusting Claim Cost Rates

As discussed in Section 2.2, HIV-related claim cost rates based on the general population model need to be adjusted to reflect actual incidence of HIV-related disability claims. To develop appropriate adjustment factors, the Task Force compared the incidence of HIV-related disability claims from four large individual disability carriers to the expected incidence based on the companies' in force and new case rates from the general population model.

The study was based on in-force data for year-ends 1985 through 1987 and AIDS claims in 1986 and 1987. Only business issued prior to 1985 was included in order to minimize the effect of antiselection expected from business issued in 1985 and 1986. For the two-year study period, the total monthly indemnity exposed was \$1.4 million and the monthly indemnity on AIDS claims was \$178,000. For the combined period 1986 and 1987, the ratio of actual AIDS claims to expected AIDS claims was 47 percent. The Appendix documents this study.

Given the results of this study, the Task Force concluded that the following factor adjustments to the general population new case rates are reasonable:

- 50 percent for business (all untested) issued in 1984 and prior years
- 100 percent for untested business issued in 1985 and later years
- 75 percent for tested business (apply this factor after adjustment for tested business; see below).

For untested business, the factors should be applied directly to the new case rates in Table 2B. For tested business, the new case rates in Table 2B should be adjusted before applying the above factor. This adjustment excludes new AIDS cases resulting from infections prior to the year the business was tested. To make this adjustment, multiply the new case rates in

TABLE 2D
PRESENT VALUE OF DISABILITY INCOME BENEFITS
PER \$1.00 MONTHLY INDEMNITY DISCOUNTED AT 6.00%

Age at Disablement	Elimination Periods				
	1	2	3	6	12
To Age 65 Benefit Period					
15-45	25.87	24.93	24.03	21.53	17.36
46	25.86	24.92	24.02	21.52	17.35
47	25.85	24.91	24.00	21.50	17.34
48	25.83	24.88	23.98	21.48	17.31
49	25.79	24.85	23.95	21.45	17.28
50	25.75	24.81	23.91	21.41	17.24
51	25.69	24.75	23.84	21.35	17.18
52	25.60	24.66	23.76	21.26	17.09
53	25.48	24.54	23.63	21.13	16.97
54	25.30	24.36	23.46	20.96	16.79
55	25.06	24.12	23.21	20.71	16.54
56	24.71	23.77	22.86	20.36	16.20
57	24.21	23.27	22.37	19.87	15.70
58	23.52	22.58	21.67	19.17	15.01
59	22.53	21.59	20.69	18.19	14.02
60	21.14	20.20	19.30	16.80	12.63
61	19.17	18.23	17.33	14.83	10.66
62	16.33	15.39	14.49	11.99	9.39
63	14.70	14.11	13.55	11.99	9.39
64	14.70	14.11	13.55	11.99	9.39
Two-Year Benefit Period					
15-64	14.70	14.11	13.55	11.99	9.39
Five-Year Benefit Period					
15-59	22.01	21.18	20.38	18.19	14.56
60	22.01	21.18	20.38	18.19	12.63
61	19.17	18.23	17.33	14.83	10.66
62	16.33	15.39	14.49	11.99	9.39
63	14.70	14.11	13.55	11.99	9.39
64	14.70	14.11	13.55	11.99	9.39

AIDS Mortality Scenario:

Yr 1	0.35
Yr 2	0.35
Yr 3	0.35
Yr 4+	0.25

Table 2B by the ratio obtained from Table 2A of the cases from infections in or after year X to all cases in the appropriate calendar year, where year X is the year in which the business was HIV-tested. For example, for those tested in 1989, the adjustment to determine the AIDS new case rate for calendar year 2000 is based on the following:

- Compute the ratio of the sum of the new cases from infections in 1989 and later (6,780 + 6,451 + 25,217) to total new cases (85,833) from Table 1. The result is 0.448.

- This ratio is then multiplied by the 75 percent factor for tested business.
- The result (0.336) is applied to the new case rate in Table 2B.

Rationale for Adjustment Factors

The 50 percent factor for 1984 and prior issues is based on the actual-to-expected ratio from the intercompany study reported earlier in this section. The characteristics and trends in each company's business should be considered in order to determine whether a factor other than 50 percent should be selected. The 100 percent factor for untested 1985 and later issues is double the 50 percent factor for earlier issues to account for the antiselection that likely occurred after AIDS became generally recognized.

The 75 percent factor for tested business is applied after first adjusting the HIV-related claim cost rates to recognize the effect of testing, as previously described. This factor, for those becoming infected after testing negative, assumes a higher proportion of high-risk individuals in the tested group than in the untested group of 1984 and prior issues. This is due to the higher potential for antiselection among high-risk individuals who are motivated to purchase insurance in case they become infected later. However, this could be partially offset by the "sentinel effect" of testing: that is, the deterrence of high-risk individuals from being tested. In the absence of specific information, the Task Force has assumed a factor of 75 percent.

As mentioned in Section 1.3, lower rates of lapsation among infected persons are likely to increase HIV-related claim cost rates. Thus, it may be necessary to increase these factors for policies in the later policy durations. The extent of the increase will depend on the persistency of the non-HIV business in each individual company, versus the persistency of the high-risk and HIV-infected business.

Although these factors seem reasonable, they should be applied with great discretion. Future intercompany studies should provide greater accuracy. Actuaries must evaluate whether these factors reflect reasonable representations of their own companies' experience.

2.4 Evaluation of Geographical Differences

Data from the CDC indicate a very uneven geographical distribution of AIDS cases and deaths. The Task Force concluded that it is reasonable for the actuary to recognize geographic differences in the estimation of the financial impact of AIDS, unless the company has a distribution of business that is similar to that of the general population.

A discussion of geographic differences and various approaches available to recognize these differences is provided in Sections 2.5, 2.6 and 2.7 of the Individual Life Report. Appendix 4 of the Individual Life Report provides "state incidence multipliers" based on AIDS cases diagnosed in years 1986-1988 and reported to the CDC. These multipliers are also included in Table 2E of this report. Adjustments based on CDC data are made to exclude cases not likely to be found in the insured population.

TABLE 2E
SUGGESTED STATE AIDS INCIDENCE
MULTIPLIERS

State	Multipliers	State	Multipliers
AL	60%	MT	10%
AK	30	NE	20
AZ	70	NV	100
AR	40	NH	40
CA	180	NJ	130
CO	100	NM	50
CT	80	NY	200
DE	80	NC	30
DC	900	ND	10
FL	200	OH	60
GA	130	OK	50
HI	100	OR	70
ID	10	PA	60
IL	80	RI	70
IN	30	SC	50
IA	20	SD	10
KS	40	TN	50
KY	40	TX	120
LA	90	UT	40
ME	30	VT	20
MD	110	VA	50
MA	100	WA	80
MI	40	WV	10
MN	50	WI	30
MS	50	WY	10
MO	80		

Note: See Appendix 4 of the Life Report for the development of the suggested state AIDS incidence multipliers.

2.5 Underwriting Adjustments

Of primary importance to the impact of HIV on a company's claims experience are its underwriting procedures, in particular HIV-antibody blood-testing limits. Changes in underwriting during the HIV/AIDS epidemic need

to be analyzed, both in absolute terms and in comparison to other insurers. Insurers with the most liberal underwriting are most at risk of antiselection. Other underwriting factors, including the date on which a company started age and amount testing, the initial limits used, the dates on which testing limits changed, and the level of these changes, may all affect the level of HIV infection in the insured population of a company. Hence, adjustments may be necessary to determine a specific company's level of expected HIV claim experience.

Persons already infected with the HIV virus can sometimes be identified through medical histories. If medical history questions are not asked (for example, guaranteed issue) or are not thorough (for example, simplified underwriting), HIV-infected individuals could be missed.

2.6 The Actual Calculation

A starting point for the valuation actuary's review of the financial implications of AIDS on a company is the calculation of the projected future cost of AIDS by calendar year. Some methods of converting this cost into reserves, earmarked surplus or adjustments in dividends or nonguaranteed rates are discussed in Section 3 of the Individual Life Report, which also describes some methods of establishing reserves. The discussion is equally applicable to individual disability insurance.

Stated simply, the process of determining the cost by year involves producing appropriate exposures and applying appropriate disability claim cost rates. This process is described below. The method described assumes that the claim cost rates have been geographically adjusted by the company as appropriate to its situation. (The alternative of applying separate claim cost rates to geographically divided exposures could use a similar methodology.)

The text below describes an approximate, aggregate method which is sufficiently accurate in view of the other broader approximations involved. Actuaries who wish to use more refined methodology may use multiple decrement mathematics. In this case, the two groups are HIV-infected and noninfected with movement possible from the latter to the HIV-infected states. The disability incidence rates and the lapse rates are different in each state. In the following we assume a zero lapse rate in the infected group.

Calculating Exposures

In order to calculate exposures, the valuation actuary must produce year-end (or other valuation date) in-force amounts and reserves from the valuation files by sex, attained-age, elimination-period and benefit-period, and

year-of-issue groups. (The refinement of reflecting plan distribution is ignored in this example, but can be effected by plan-weighting the claim cost rates or separating exposures by plan.) These are called basic valuation cells.

The valuation actuary then must project the in-force in these basic valuation cells through the use of *survivorship only* based on company experience and ignoring AIDS extra mortality for the next 20 years or more. The reason for ignoring lapsation is to reflect the likelihood that the high-risk group may have close to 100 percent persistency. The HIV-related claim cost rates will be applied to these exposures to produce claim costs.

Calculating Claim Cost Rates

Using the appropriate AIDS new case rates in Table 2B, multiplied by the appropriate present value of benefits factor from Table 2C, the valuation actuary should next apply factors for the individual company comparable to the 50%/100%/75% adjustments in the sections above, plus geographic, underwriting, or other factors deemed appropriate to the company's distribution of business in force. The valuation actuary should produce HIV-related claim cost rates by age, sex, elimination period, benefit period, and calendar year for the company. (Alternatively, the percentage factors may be applied as appropriate to the basic valuation cells after projected claims, without adjustment, are calculated for those cells.)

Applying the Rates

Claim cost rates, calculated as above, should then be applied to the amount exposed, calculated as above, in each valuation cell/calendar year combination. This produces HIV-related claim costs by calendar year. This is the outward cash flow which may be offset by some inward cash flow, for example, allocated dividend adjustments, surplus allocation, price changes, or reduced profit margins. These are all discussed in Section 3 of the Individual Life Report.

If desired, these claim costs can be converted into lapse-adjusted rates by dividing them by exposures adjusted by persistency factors. These lapse-adjusted claim cost rates can then be used in a traditional reserve calculation similar to that in Appendix 6 of the Individual Life Report. However, this produces another level of assumptions (persistency) that will need periodic review.

If present values of claim cost are to be obtained, the appropriate discount factors are those without a decrement for lapse, that is, interest only. If these

present values are to be amortized or offset by a future inward cash flow, the appropriate annuity for the inward cash flow is one with a decrement for lapse.

While this approach is contrary to the statutory approach of ignoring lapse, we are dealing with two distinct subgroups, one that produces most of the extra cost (and has low lapse rates) and one that produces most of the future income and should experience "normal" expected lapse rates. Statutory methodology may need to be modified to take this into account.

Qualifications

There are some discrepancies in the above methodology, the most important of which are:

1. There will be some lapses among the high-risk group, particularly among individuals who are not yet infected. The application of HIV-related claim cost rates to projected amounts of coverage that were developed without lapse rates therefore will tend to overestimate future HIV-related claims. Actuaries may therefore wish to use a lapse rate greater than zero in projecting exposures.
2. The use of annuity factors on the income side that take account of normal expected lapse will understate the positive cash flow, since high-risk groups with low expected lapse rates also contribute to the income.
3. The factors suggested in Section 2.3, for example, 50 percent, are based on historical experience and therefore already adjust for lapse differentials so far experienced.

3. FINANCIAL ANALYSIS AND RESERVE CONSIDERATIONS

Section 3 of the Life Report addresses the financial analyses that must be completed to assess the implications of AIDS on life insurance companies. It first defines the Task Force's conclusions with respect to the role of the valuation actuary in this regard. Certain issues are reviewed that should be considered in performing the calculations. The desirability of developing a company plan to deal with the cost of AIDS is then discussed. Section 3 of the Individual Life Report concludes with statutory and GAAP reserve considerations. This discussion is equally applicable to individual disability insurance.

Section 3 of this report discusses two subjects specific to individual disability insurance. The first is specific individual disability product and experience considerations that may affect a company's plan to deal with the cost of AIDS. The second is the impact of AIDS on disabled life reserves.

3.1 Product and Experience Considerations for Individual Disability Insurance

The great majority of individual disability products in force today are noncancellable, in which both the premium rates and renewability are guaranteed at the time the policies are issued. Most of the remaining products are guaranteed renewable, for which the rates are not guaranteed, or conditionally renewable, for which neither the rates nor the renewability are guaranteed.

Products with nonguaranteed premium rates have a lower risk relative to AIDS because premiums may be adjusted in the future to recognize the emerging AIDS experience. However, management must always be sensitive to the additional lapses that may occur whenever rates are increased. This consideration may limit the amount of the HIV claim costs that management attempts to fund through higher premium rates.

The noncancellable products may be classified into those that guarantee all policyholders' costs at issue and those with nonguaranteed dividend scales. The latter group of policies are offered by many mutual companies and may allow management to completely or partially fund the financial impact of AIDS as experience develops.

The noncancellable products with guaranteed costs (that is, no dividends or participating products with no dividends currently payable) have the highest risk associated with AIDS of all individual disability products. For in-force policies in which AIDS was not anticipated when the rates were determined, management should expect lower future profits as AIDS experience emerges. The impact of establishing and maintaining additional reserves for future HIV claims cannot be offset by increased costs to the policyholders. When pricing new products, however, management should project future HIV claims, although allowing for the impact of HIV blood-testing in the underwriting process. In this manner, management can hope to restore its desired expected level of profitability, at least on new business.

Individual disability insurance is currently sold primarily in the professional and executive market. This market is not insulated from the AIDS risk. The intercompany AIDS study on individual disability insurance published in the *Disability Newsletter*, DN-51, April 1988, categorized claims by occupation. Although no in-force data were collected that could be used to calculate HIV incidence rates by occupational categories, the study showed that a large majority of AIDS claims were on doctors, dentists, executives, lawyers, and accountants, five of the most predominant occupations in the

individual disability insured population. Future studies may observe significant differences in HIV incidence rates by occupation. For now, with a lack of evidence to prove otherwise, it is reasonable to assume that the underlying HIV incidence rates on male lives will be the same for all occupations in the individual disability insured population.

Since the mid-1980s, the profitability of individual disability insurance in general has undergone significant deterioration due to factors unrelated to AIDS. Such factors include ongoing contract liberalizations, rate competition particularly with unisex rates and group discounts, higher issue and participation limits, guaranteed and simplified underwriting, and a sharp increase in mental/nervous and musculoskeletal claims. Although companies have responded to the AIDS risk through HIV blood-testing of larger size applied-for amounts, the seriousness of the potential future costs of AIDS has been overshadowed by companies' more current profitability problems.

3.2 Disabled Life Reserves

As discussed in Chapter 1 of this report, the claim continuance patterns of HIV-related disability claims and non-HIV claims are significantly different. The table below compares disabled life reserves for an HIV-related claim and a non-HIV claim, assuming a 30-day elimination period, a to-age-65 benefit period, and age 35 at disablement. The claim continuance pattern for the AIDS-related claim is based on the 40%-40%-35%-25% postdiagnosis mortality rates assumed in the middle scenario of the report by the HIV Research Committee, and the claim continuance pattern for the non-HIV claim is based on the 1985 CIDA Table. Both sets of disabled life reserves assume a 6 percent annual discount rate.

DISABLED LIFE RESERVES PER \$1.00
MONTHLY INDEMNITY

End of Month	HIV-Related	Non-HIV
1	24.46	8.11
3	24.80	16.61
6	25.37	35.44
12	26.78	64.57
18	28.66	84.12
24	31.16	93.38
36	35.03	103.57
48	35.03	109.51

Many companies currently hold disabled life reserves on HIV-related claims that are based on non-HIV claim continuance assumptions. For new HIV-related claims, the disabled life reserves may be understated, but for longer duration claims there may be considerable redundancy in the reserve. In the aggregate, for a developing block of HIV-related claims, a growing redundancy may develop in the block of disabled life reserves if they are based on non-HIV claim continuance experience.

In the process of developing an additional reserve for anticipated future HIV-related claims, the actuary should also recognize any potential disabled life reserve redundancy on open HIV-related claims. This potential redundancy may be available to offset part of any additional active life reserve appropriate to anticipate future HIV-related claims.

APPENDIX

INTERCOMPANY STUDY OF THE INCIDENCE OF HIV-RELATED INDIVIDUAL DISABILITY CLAIMS

The Task Force conducted an intercompany study of the incidence of HIV-related individual disability claims. The objective of this study was to measure the actual incidence of HIV-related disability claims against an expected incidence based on the AIDS new case rates from the general population model (middle scenario) developed by the SOA Committee on HIV Research.

Four companies submitted data to this study. They represented four of the five largest U.S. companies with respect to the amount of in-force individual disability premium. Each company submitted in-force monthly indemnity for year-ends 1985, 1986 and 1987 on business issued prior to 1985. These data were grouped by attained age and elimination period and adjusted to reflect male lives only. Business issued in 1985 and later was excluded in order to minimize the impact of antiselection. The monthly indemnity of reported HIV-related claims on business issued prior to 1985 was submitted for years of disablement 1986 and 1987. The claim data were also grouped by attained age at disablement and elimination period. The tables below summarize the submitted data.

TASK FORCE ON FINANCIAL IMPLICATIONS OF AIDS

IN-FORCE MONTHLY INDEMNITY
 BUSINESS ISSUED PRIOR TO 1985
 ALL PARTICIPATING COMPANIES COMBINED
 (000 OMITTED)

Elimination Period	Year-End		
	1985	1986	1987
30 Days and Under	\$274,587	\$244,824	\$220,472
60 Days	104,687	93,807	85,135
90 Days	300,259	270,446	246,203
Over 90 Days	105,589	95,511	86,283
	\$785,122	\$704,589	\$638,094

MONTHLY INDEMNITY
 REPORTED HIV-RELATED DISABILITY CLAIMS
 BUSINESS ISSUED PRIOR TO 1985
 ALL PARTICIPATING COMPANIES COMBINED

Elimination Period	Year of Disablement	
	1986	1987
30 Days and Under	\$48,136	\$31,647
60 Days	11,983	22,065
90 Days	38,225	14,960
Over 90 Days	5,150	5,400
	\$103,494	\$74,072

All claims from three of the four companies satisfied the elimination period. Although the claims from the fourth company included some that had not satisfied the elimination period, it is reasonable to assume that this group was relatively small and that its inclusion would not materially distort the results of the study.

The expected claim incidence rates were based on the new AIDS case rates from the middle scenario of the general population AIDS model developed by the SOA Committee on HIV Research. The expected new case rates by attained age and calendar year are as follows:

NEW AIDS CASE RATES PER 1,000

Pivotal Age	Calendar Year	
	1986	1987
22	0.065	0.099
27	0.231	0.346
32	0.380	0.551
37	0.382	0.554
42	0.320	0.447
47	0.222	0.315
52	0.139	0.203
57	0.086	0.129
62	0.047	0.070

For each elimination period, the above new case rates were multiplied by the following survivorship factors that take into account the expected mortality during the elimination period based on 40 percent first-year mortality rate:

SURVIVORSHIP FACTORS
DURING ELIMINATION PERIOD
ASSUMING 40 PERCENT
FIRST-YEAR MORTALITY RATE

Elimination Period	Survivorship Factor
30 Days and Under	0.9583
60 Days	0.9184
90 Days	0.8801
Over 90 Days	0.7746

The table below shows the resulting actual-to-expected incidence ratios by elimination period.

ACTUAL-TO-EXPECTED
HIV DISABILITY INCIDENCE RATIOS
ASSUMING 40 PERCENT FIRST-YEAR MORTALITY RATE

Elimination Period	Calendar Year		Combined
	1986	1987	
30 Days and Under	0.801	0.424	0.592
60 Days	0.476	0.693	0.597
90 Days	0.602	0.189	0.373
Over 90 Days	0.276	0.232	0.252
Overall	0.618	0.354	0.472

The above table shows interesting differences by elimination period and calendar year. However, given the size of the database, it is difficult to conclude whether these differences are meaningful. The Task Force decided to rely only on the 0.472 ratio for the combined calendar years and elimination period. It concluded that it is reasonable to multiply the general population new case rates by 50 percent to project the incidence of future HIV claims on business issued prior to 1985.