REPORT OF THE DIRECT RESPONSE
PERSISTENCY AND MORTALITY TASK FORCE[1]

MORTALITY AND PERSISTENCY EXPERIENCE
OF DIRECT MARKETED LIFE AND
SUPPLEMENTAL HEALTH CONTRACTS
BETWEEN 1990 AND 1992

I. INTRODUCTION

This report presents complete results from the study undertaken during 1993 and 1994 by the Direct Response Persistency and Mortality Task Force. The task force was assembled to study mortality and persistency experience of direct marketed life and supplemental health contracts. In this report, data for direct response products are presented in three categories:
(1) Persistency experience on life and supplemental health products
(2) Mortality experience on underwritten term products
(3) Mortality experience on guaranteed issue, graded death benefit products.

A. Background

The period of study covered policy exposures between 1990 and 1992, although one company's data that covered 1989–1991 were included in the study. The data were separated by product type, as defined in the next section, and also by a number of additional categories as follows:
- *Policy Duration.* For persistency, durations 1 through 5 were obtained separately and durations 6 through 10 were combined, as were durations 11+. For mortality, durations 1 through 10 were obtained separately and duratons 11+ were combined.
- *Distribution Method.* Solicitation conducted using various combinations of television, mail, and telephone.
- *Billing Method.* Whether the product is billed directly, through credit card following telemarket solicitation, through credit card following other solicitation, or though another automated device such as pre-authorized checks.

○ *Type of Market (for Durations 1–5 Only)*:
  — Broad. Product offerings to the general population or a segment of the general population through media such as purchased lists or television, newspaper, etc., without the benefit of third-party organizational sponsorship.
  — Current Customers. Product offerings to the carrier's existing customer base. This customer base may have been obtained through direct response or traditional agency distribution channels. This category does not include non-insurance customers, such as retail customers of a parent company.
  — Affinity. Third-party sponsorship of product offerings, including but not limited to professional associations, credit unions, financial institutions, retail stores, oil companies (credit cards), alumni groups, and unions. In the data request, affinity group was split into weak and strong—the difference being that the sponsorship had resulted in (or would likely result in upon maturation) member participation rates of greater than or less than 10%. In the data received, only groups in the less-than-10% category were obtained.
○ *Policy Size.* Policies were grouped into initial face amount categories of less than $25,000, $25,000–$99,999, and $100,000+.
○ *Age.* Products were grouped into five-year age groupings (18–34 for issue ages under 35).
○ *Gender.*
○ *Underwriting Approach.* Defined in Section III, Mortality Experience for Underwritten Products.

Based on the sparsity of the data in some cells, we believed it would not be appropriate to try to split the data into many categories. As such, the data are split only by criteria that we thought would give credible results and/or that present necessary distinctions for persistency and mortality analysis. For mortality, results are reported based on actual-to-expected (A/E) ratios rather than absolute q_x's.

B. Product Types

The products in this study are split into five broad categories with sample subcategories in the table below. For the mortality results only the life products are reviewed.

General Category	Abbreviation	Plan
Life Products		
Term	ART/Ren Term	Annual renewable term and other renewable term
	Dec Term	Decreasing term
	GDB Term	Graded-death-benefit whole life
Whole Life	WL	Whole life (level benefit)
	GDB WL	Graded-death-benefit whole life
A&H Products		
Indemnity	HIP	Hospital indemnity (all causes)
	HAP	Hospital indemnity (accident only)
	Cancer	Cancer indemnity
Accident	ADB/AD&D	Accidental death benefit/accidental death and dismemberment
	Travel ACC	Travel accident
Medicare Supplement	Med Supp	Medicare supplement

C. Contributors

Questionnaires were sent to 26 companies believed or known to have direct response business. Nine companies responded with contributions to either the persistency or mortality study or both. These companies were:

- Allstate Life Insurance Company
- American National (Garden State) Life Insurance Company
- Colonial Penn Life Insurance Company
- Mutual of Omaha Insurance Company
- National Liberty/National Home Life Insurance Company
- North American Life Insurance Company
- Provident Mutual (Continental American) Life Insurance Company
- Union Fidelity Life Insurance Company
- USAA Life Insurance Company.

In addition, two companies that were unable to complete the requisite forms for the study sent collaborative data from their own persistency or mortality systems for use in reviewing reasonableness of results. However, these data were in such a form that they could not be directly included in this study.

II. PERSISTENCY EXPERIENCE

The analysis presents true persistency—as distinguished from lapse—results, because we have analyzed total termination rates. These termination

rates include deaths, expiries, and conversions. Given the form in which persistency information was available from many contributing companies, the Task Force believed that the responses and data would be too limited if an attempt were made to do a true exposure calculation and analysis. It was believed that expiries and conversions were fairly small relative to the overall analysis and could be safely ignored. The user must recognize that deaths are included in the persistency analysis and should not be ignored.

The study was designed to capture durational information on a per-policy-exposed-to-lapse basis. The initial exposed-to-lapse amount were policies in force at the beginning of a duration. For the first duration, the initial exposure is defined as policies for which the first full modal premium was paid and not later refunded. Therefore, not-takens are excluded from this study. Duration 2 exposures are based on policies for which the 13th month premium was paid. To better measure the early months' terminations, data for the first three months were separately identified where possible as a subset of the first-year persistency. It is recognized that modal distinctions must be considered in reviewing the first three months' results.

A number of direct response policies are sold with a "deviated premium"; that is, they are sold where the first month's (sometimes longer) premium is either given away or has a rate substantially lower than later rates, such as $1. For these policies, both the first-year and the first three months' persistency definition represents twelve or three months, respectively, after the first full premium is paid. No attempt was made to capture the lapse experience (perhaps better referred to as not-takens) between issue and collection of first full premium in the case of deviated premiums.

In a few instances, companies were unable to provide data in the exact form requested. In these instances we discussed the data with the responding company and tried to determine whether the data could be made meaningful. For example, one company could provide persistency data for durations 3–5 combined only. In this case we divided the data by 3 and put one-third in duration 3, one-third in duration 2 and the last third in duration 5. Similarly, one company kept its records in decennial age groupings, so before submitting the data, the company divided the data in half to fit the quinquennial age groups (for example, for an age group 40–49 the assumption was made that half the exposure and half the lapses fit into the 40–44 group and the other half fit into the 45–49 group).

Figure 1 summarizes persistency experience for term products. ART/renewable term includes any term product whose premium either changes annually or changes periodically. The change may be determined by the

attained age or by duration such as five- or ten-year banded term or step-rated term. This also includes any select and ultimate term or revertible term. The duration for this product is measured from the original issue date, not the renewal date.

FIGURE 1

PERSISTENCY EXPERIENCE FOR TERM PRODUCTS
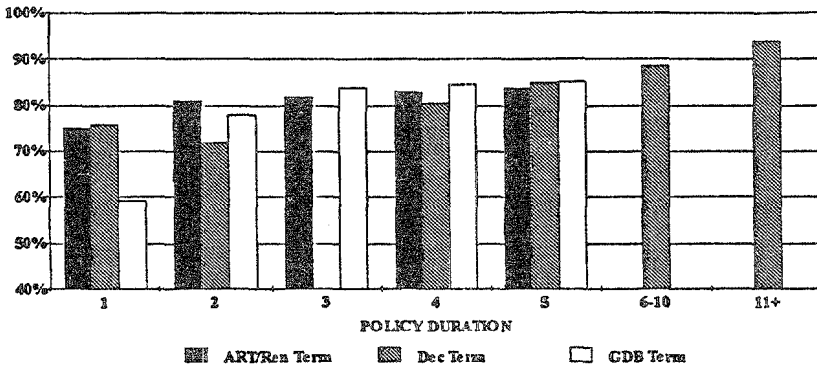
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
ART/ Ren Term	75.4%	75.0%	80.9%	81.7%	82.8%	83.7%	n/a	n/a
Dec Term	n/a	75.7%	71.7%	n/a	80.4%	84.8%	88.5%	93.8%
GDB Term	77.2%	59.1%	77.8%	83.7%	84.4%	85.0%	n/a	n/a
Total Term	75.8%	73.2%	77.4%	82.6%	82.5%	84.5%	88.5%	93.8%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
ART/ Ren Term	49,778	107,332	91,995	91,632	101,538	96,211	n/a	n/a
Dec Term	n/a	19,283	60,357	n/a	129,220	40,266	100,917	45,970
GDB Term	14,408	17,443	33,245	78,705	117,630	123,217	n/a	n/a
Total Term	64,186	144,058	185,597	170,337	348,388	259,694	100,917	45,970

Decreasing term includes any term product whose face amount decreases by predefined amounts. This would include, but not be limited to, mortgage term. The premium for decreasing term may or may not be level.

GDB term is a term product that for the first few years has a limited death benefit feature such as return of premium, accident only, or low face amount. The premium may be level or increasing; the face amount may be level or may decrease.

Both the ART/renewable term and the GDB term follow what many would consider a normal pattern of increasing persistency with policy duration. Persistency levels are often in the low- to mid-80%'s from duration 3 forward. The guaranteed issue GDB term, however, has an initial persistency that is much lower in policy year 1 than the underwritten ART/renewable term: 59.1% compared to 75%, respectively. Data after duration 5 were unavailable for both of these products.

For decreasing term, there is a dip in persistency between policy years 1 and 2. This may be a reaction to the decreasing benefits; however, the exact level of decrease and pattern of decrease that underlie these products are unclear. Also, the first-year exposure for decreasing term was much smaller than the second-year exposure, and this drop may reflect different groups in the study. In later durations, the policy persistency rates continue to improve, moving well into the 90%+ range by duration 11.

For the ART/renewable term there is an apparent inconsistency between the first three months' results and the first-year result. The exposure for the full first-year duration is more than double the data captured for the first three months. This implies that there is some nonhomogeneity of experience among the contributors.

Figure 2 summarizes persistency experience for whole life products. GDB whole life is a guaranteed issue whole life product that in the first few durations has a limited death benefit feature such as return of premium, accident only, or low face amount.

The whole life category includes any other form of permanent insurance. No interest-sensitive life was included in the study. There was not a significant amount of exposure in the whole life category, which is indicative of the small amounts of whole life business issued via direct mail. No duration 1 experience was available for whole life.

The GDB life results persist slightly better than the whole life results through duration 4. For durations 5 and above, both products level out in the low 90%'s. Both these products have an average issue age above 60. Therefore, mortality should be considered a substantial component piece of the overall persistency.

FIGURE 2

PERSISTENCY EXPERIENCE FOR WHOLE LIFE PRODUCTS
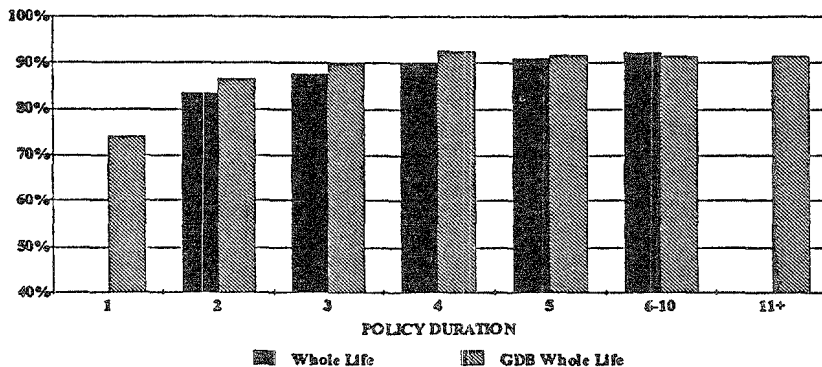
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
WL	n/a	n/a	83.2%	87.4%	89.6%	90.9%	92.1%	n/a
GDB WL	83.6%	73.8%	86.3%	89.7%	92.5%	91.5%	91.3%	91.3%
Total WL	83.6%	73.8%	85.9%	89.5%	92.3%	91.4%	91.6%	91.3%
Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
WL	n/a	n/a	33,468	17,506	17,026	16,386	229,492	n/a
GDB WL	220,493	277,177	220,844	160,557	225,417	130,335	467,885	307,456
Total WL	220,493	277,177	254,312	178,063	242,443	146,721	697,377	307,456

Persistency experience by issue age is contained in Figure 3. This information comprises both term and whole life insurance, so caution must be used in interpreting the results. Figures 4 and 5 separate experience into that for term and for whole life, respectively. The persistency generally increases with increasing age for both whole life and term. We note again that deaths are not separated from lapses and consist of a significant, but undefined, portion of terminators at the older ages.

FIGURE 3

PERSISTENCY EXPERIENCE BY ISSUE AGE FOR LIFE PRODUCTS
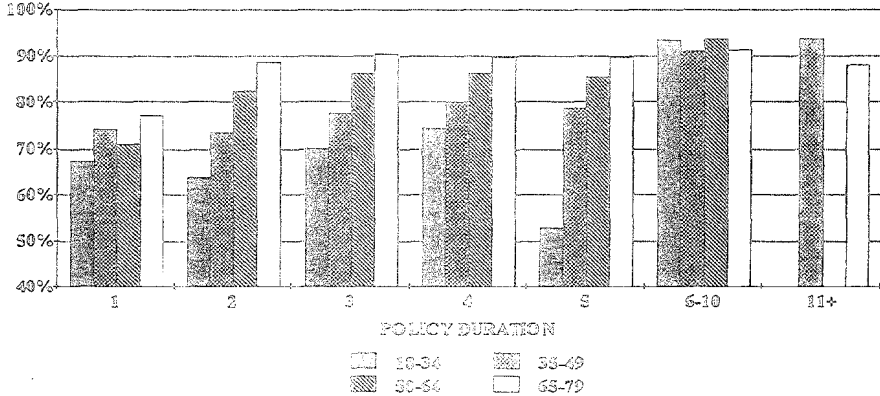
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
18-34	85.5%	67.3%	63.8%	70.1%	74.5%	52.8%	93.3%	n/a
35-49	85.2%	74.1%	73.5%	77.6%	79.7%	78.6%	90.9%	93.5%
50-64	82.7%	71.0%	82.3%	86.1%	86.2%	85.4%	93.6%	n/a
65-79	84.0%	77.1%	88.6%	90.3%	89.6%	89.7%	91.1%	87.9%
Total LIFE	83.7%	73.2%	80.3%	83.6%	84.7%	84.0%	91.8%	89.9%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
18-34	19,410	47,617	43,118	45,120	49,538	11,981	17,085	n/a
35-49	38,060	81,163	75,176	74,590	87,249	60,620	51,519	36,770
50-64	118,307	151,039	151,892	145,596	261,197	101,653	101,132	n/a
65-79	96,221	133,595	111,667	104,583	113,056	95,204	208,867	66,822
Total LIFE	271,997	413,413	381,852	369,889	511,039	269,458	378,602	103,592

FIGURE 4

PERSISTENCY EXPERIENCE BY ISSUE AGE FOR TERM PRODUCTS
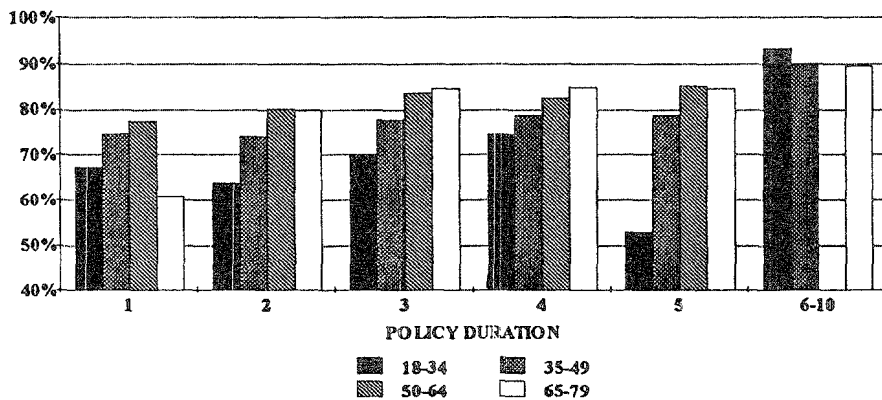
Persistency	1st 3 mo.	1	2	3	4	5	6-10
18-34	85.5%	67.3%	63.8%	70.1%	74.5%	52.8%	93.3%
35-49	86.2%	74.7%	73.9%	77.6%	78.7%	78.6%	89.9%
50-64	83.8%	77.3%	80.0%	83.5%	82.3%	84.9%	n/a
65-79	78.5%	60.8%	79.6%	84.5%	84.7%	84.4%	89.5%
Total	84.9%	72.4%	73.1%	78.5%	80.4%	81.1%	91.2%
Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10
18-34	19,410	47,617	43,118	45,120	49,538	11,981	17,085
35-49	30,569	74,756	69,094	74,590	77,294	60,620	27,130
50-64	16,880	30,494	40,413	61,661	151,114	96,220	n/a
65-79	5,258	6,318	10,864	24,150	35,200	34,817	809
Total	72,117	159,185	163,489	205,521	313,146	203,638	45,024

FIGURE 5

PERSISTENCY EXPERIENCE BY ISSUE AGE FOR WHOLE LIFE PRODUCTS
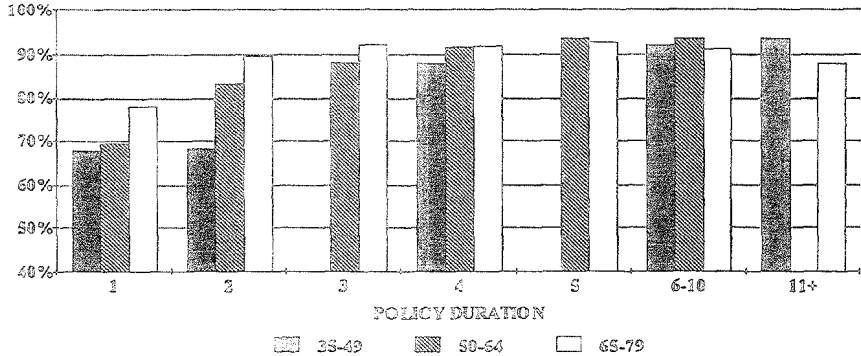
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
35-49	81.0%	67.8%	68.3%	n/a	88.0%	n/a	92.0%	93.5%
50-64	82.5%	69.4%	83.2%	88.1%	91.6%	93.6%	93.6%	n/a
65-79	84.3%	77.9%	89.6%	92.1%	91.8%	92.7%	91.1%	87.9%
Total	83.3%	73.6%	85.7%	90.1%	91.5%	92.8%	91.9%	89.9%
Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
35-49	7,491	6,407	6,082	n/a	9,955	n/a	24,389	36,770
50-64	101,427	120,545	111,479	83,935	110,083	5,433	101,132	n/a
65-79	90,963	127,277	100,803	80,433	77,856	60,387	208,056	66,822
Total	199,881	254,229	218,364	164,368	197,894	65,820	333,577	103,592

Figure 6 summarizes persistency experience for A&H indemnity products. HIP products include any product for which the primary benefit is a daily indemnity benefit for hospitalization. The HAP products have the variation that the hospitalization must be due to an accident. Cancer products provide scheduled indemnity benefits only upon cancer incidence. These indemnity benefits consist of hospitalization benefits, surgical schedules, radiation, and similar scheduled benefits.

FIGURE 6

PERSISTENCY EXPERIENCE FOR A&H INDEMNITY PRODUCTS
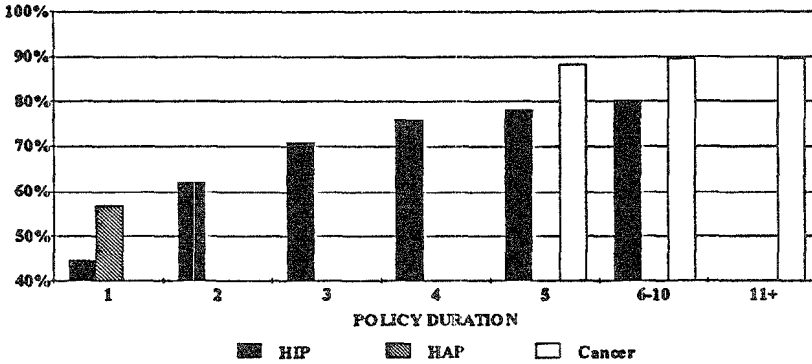
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
HIP	73.2%	44.5%	62.0%	70.9%	76.3%	78.3%	80.4%	n/a
HAP	82.2%	56.7%	n/a	n/a	n/a	n/a	n/a	n/a
Cancer	n/a	n/a	n/a	n/a	n/a	88.2%	89.4%	89.5%
Total Indemnity	80.2%	53.1%	62.0%	70.9%	76.3%	80.9%	81.7%	89.5%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
HIP	76,892	126,454	79,063	62,348	105,345	94,302	708,145	n/a
HAP	262,068	307,111	n/a	n/a	n/a	n/a	n/a	n/a
Cancer	n/a	n/a	n/a	n/a	n/a	32,943	121,250	256,140
Total Indemnity	338,960	433,565	79,063	62,348	105,345	127,245	829,395	256,140

In the experience reviewed, about half of the HIP and HAP policy-owners lapse during policy year 1. HAP fares significantly better with duration 1 persistency rates of 56.7% than HIP, at 44.5%. The average premium on the HAP product is typically significantly lower than that of a HIP product and may have some bearing on the results. Unfortunately, no HAP experience was available after the first duration.

The HIP persistency rises slowly from the first-year result, but still reaches only 80.4% in policy year 6–10.

Cancer experience was available only for older business—durations 5+. Persistency rates in these policy years are slightly less than 90% and appear to have a stable pattern by duration.

Figure 7 summarizes persistency experience for A&H accident products. Travel accident includes combinations of plans that provide coverage for motor vehicle/pedestrian accident and common carrier. Some coverage may be available for other accidents but at a lower benefit level. The accidental death product provides benefits that primarily cover all accidental causes. There may be an element of extra benefits (for example, three times for common carrier) in this category. Products with and without dismemberment benefits are combined.

FIGURE 7

PERSISTENCY EXPERIENCE FOR A&H ACCIDENT PRODUCTS

Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
ADB/AD&D	n/a	n/a	n/a	78.7%	82.0%	86.2%	87.0%	n/a
Travel Acc	72.1%	52.6%	76.2%	82.6%	84.9%	87.0%	88.7%	91.6%
Total Accident	72.1%	52.6%	76.2%	82.3%	84.8%	87.0%	88.7%	91.6%
Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
ADB/AD&D	n/a	n/a	n/a	38,282	24,240	12,364	18,972	n/a
Travel Acc	576,104	933,795	523,693	505,698	529,786	597,761	1,769,796	692,844
Total Accident	576,104	933,795	523,693	543,980	554,026	610,125	1,788,768	692,844
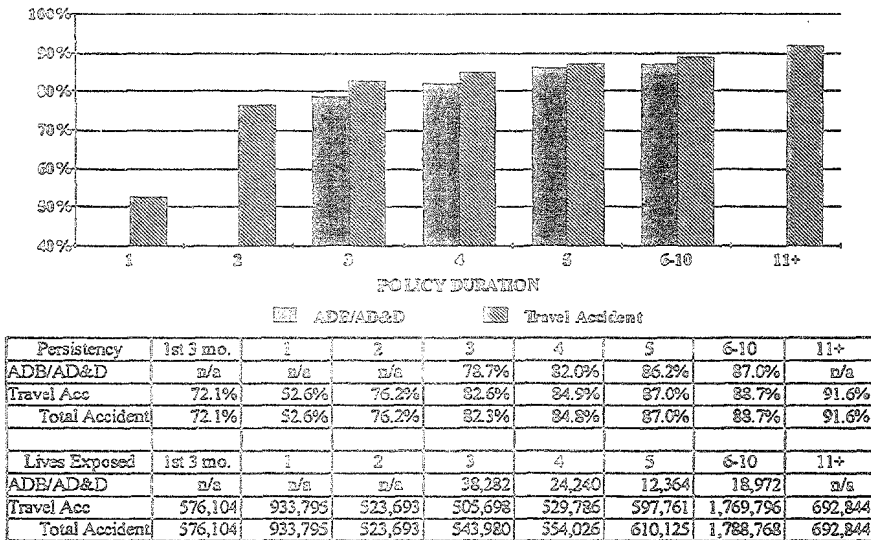
Significantly more exposure was available for travel accident than for ADB. Because of this, comparative analysis between these products should not be drawn from this study.

ADB coverage shows somewhat improved persistency by duration beginning in duration 3 (the first available year).

Travel accident experience by duration is complete and shows a contin-
uing increasing persistency pattern, beginning at 52.6% in policy year 1 and
rising to 91.6% by policy years 11+.

Figure 8 summarizes persistency experience for Medicare Supplement
products. This category includes broad ranges of Medicare Supplement pol-
icies, from minimal benefits to substantial benefits.

FIGURE 8

PERSISTENCY EXPERIENCE FOR A&H MEDICARE SUPPLEMENT PRODUCTS
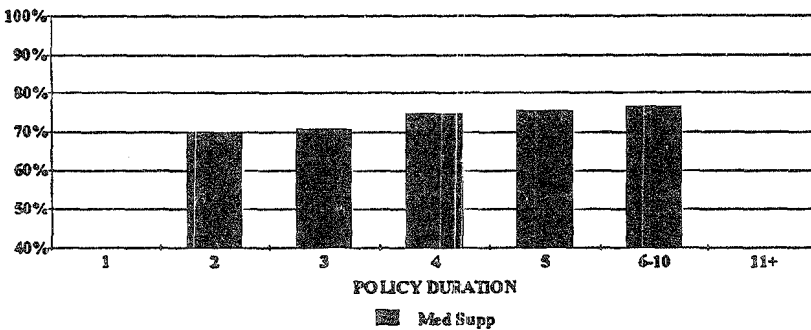
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
Med Supp	n/a	n/a	69.6%	70.6%	74.3%	75.1%	76.1%	n/a
Lives Exposed								
Med Supp	n/a	n/a	68,157	95,535	133,114	104,739	333,765	n/a

Of all the products in the study, Medicare Supplement consistently has
the lowest persistency in the later durations. All in all, the Medicare Sup-
plement persistency is relatively flat, although it does continually improve
from duration 2 at 69.6% through durations 6–10 at 76.1%.

While other products in this study may include some level of rate in-
creases embedded in the analysis that are not identified separately, Medicare
Supplement lines are usually managed to have frequent rate increases—often
annual. This product has also tended to be very rate-competitive, with
policy-owners frequently shopping rates. In addition, with the average age
of this product being well over 65, mortality will factor in as a significant
component of the lapsation.

Following are additional figures on persistency and A&H products show-
ing distinctions by market, by distribution method, by billing method, and
by issue age. In all of these the A&H products are aggregated for credibility
purposes and to protect individual company experience.

In Figure 9, which shows persistency by market, "current customers"
persistency is noticeably poorer than that for either broad market or affinity
groups. This is contrary to popular belief. Part of this is a function of the
product underlying the current customer results, which is mostly HIP and
Medicare Supplement, both of which have worse persistency than accident
products.

FIGURE 9

PERSISTENCY EXPERIENCE BY MARKET FOR A&H PRODUCTS
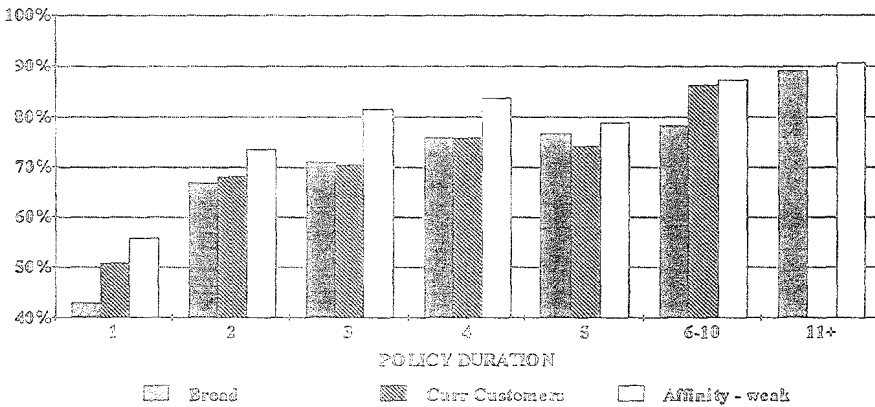
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
Broad	68.7%	42.9%	65.9%	71.0%	75.8%	76.6%	78.3%	89.1%
Current Customer	n/a	50.7%	68.1%	70.4%	75.7%	74.1%	86.1%	n/a
Affinity - weak	72.6%	55.8%	73.4%	81.4%	83.6%	78.9%	87.2%	90.7%
Total A&H	72.1%	53.4%	71.5%	78.5%	81.1%	77.4%	85.2%	90.3%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
Broad	80,637	143,056	141,165	112,673	162,266	129,067	550,311	209,344
Current Customer	n/a	23,450	20,376	15,191	20,808	4,080	779	n/a
Affinity - weak	620,179	665,433	379,143	327,490	379,572	74,204	1,934,819	811,645
Total A&H	700,816	831,939	540,684	455,354	562,646	207,351	2,485,909	1,020,989

Figure 10 shows persistency by distribution method. Mail/phone persistency means the initial direct contact was by phone. This could be from toll-free (800) calls (inbound) in response to a television advertisement or direct solicitation (outbound). The solicitation/application is by mail. Mail/mail means the initial contact and solicitation are by mail. This may be a one-step or two-step process. The mail/phone category is predominantly travel accident business.

FIGURE 10

PERSISTENCY EXPERIENCE BY DISTRIBUTION METHOD FOR A&H PRODUCTS

POLICY DURATION

Mail/Mail   Mail/Phone   Curr Cust/Mail
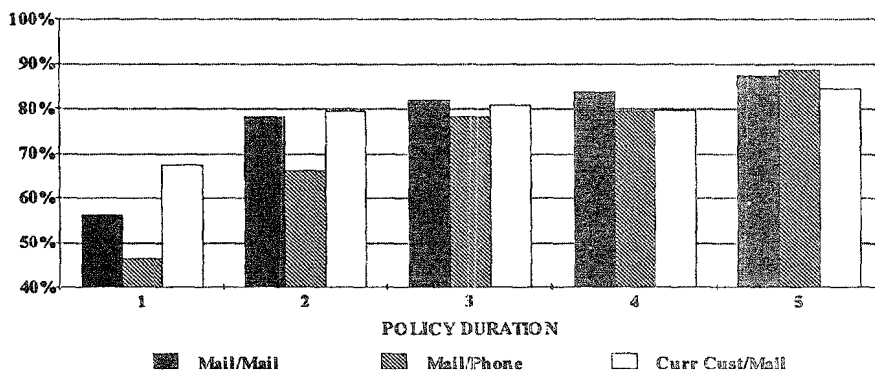
Persistency	1st 3 mo.	1	2	3	4	5
Mail/Mail	85.7%	56.2%	78.2%	82.0%	83.8%	87.4%
Mail/Phone	65.7%	46.3%	66.2%	78.2%	79.5%	88.6%
Current Customers/Mail	n/a	67.5%	79.5%	80.8%	79.7%	84.4%
Total A&H	72.6%	53.6%	76.2%	81.7%	83.5%	87.4%
Lives Exposed	1st 3 mo.	1	2	3	4	5
Mail/Mail	199,542	773,745	546,844	567,598	655,426	617,558
Mail/Phone	376,797	383,626	122,152	57,090	31,966	306
Current Customers/Mail	n/a	59,319	34,906	22,859	12,516	4,166
Total A&H	576,339	1,216,690	703,902	647,547	699,908	622,030

Figure 11, which summarizes persistency by billing method, shows distinct variations by billing methods in the early durations, but much converging by duration 4 and later. In addition, telemarketed differences on credit card billing show substantial differences in the first three durations. Most health products are broadly represented across the billing categories. The credit card-telemarketed is dominated by the "low-premium" product types—ADD/travel accident/HAP.

FIGURE 11

PERSISTENCY EXPERIENCE BY BILLING METHOD FOR A&H PRODUCTS
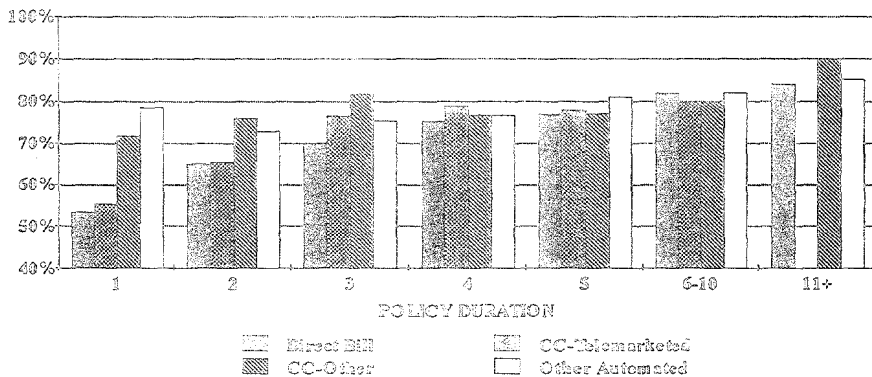
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
Direct Bill	79.0%	53.4%	65.0%	69.9%	75.1%	76.8%	81.8%	83.9%
Credit Card - Telemarketed	70.2%	55.2%	65.4%	76.4%	78.7%	77.7%	79.5%	n/a
Credit Card - Other	88.7%	71.7%	75.8%	81.6%	76.5%	76.9%	79.5%	90.0%
Other Auto(PAC,EFT,share w/d)	96.5%	78.3%	72.7%	75.2%	76.5%	81.0%	81.9%	85.1%
Total A&H	78.4%	61.2%	69.1%	75.8%	75.5%	77.1%	81.2%	85.5%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
Direct Bill	371,755	418,538	292,188	265,306	342,937	271,522	1,825,315	2,328,623
Credit Card - Telemarketed	513,461	178,541	199,479	86,204	16,194	16,552	31,243	n/a
Credit Card - Other	361,285	389,475	272,942	256,847	90,869	90,583	588,662	800,037
Other Auto(PAC,EFT,share w/d)	12,792	16,902	23,984	27,904	31,267	26,324	70,202	41,734
Total A&H	1,259,293	1,003,456	788,593	636,261	481,267	404,981	2,515,422	3,170,394

Figure 12, which summarizes persistency by age, shows that age differences are not pronounced, except for the first three durations under age 34 and the first two durations for ages 35–49. This effect is observed in all products.

FIGURE 12

PERSISTENCY EXPERIENCE BY ISSUE AGE FOR A&H PRODUCTS
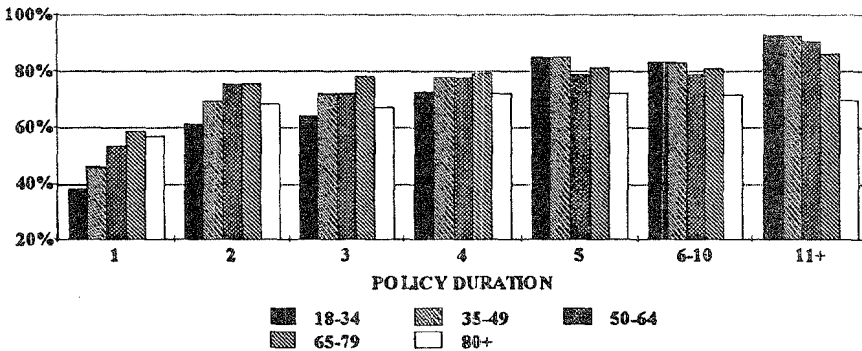
Persistency	1st 3 mo.	1	2	3	4	5	6-10	11+
18-34	75.5%	38.1%	60.9%	63.8%	72.4%	84.9%	83.1%	92.5%
35-49	77.0%	45.8%	68.8%	71.6%	77.7%	84.9%	83.1%	92.3%
50-64	79.5%	53.0%	75.1%	71.8%	77.6%	78.9%	78.8%	90.4%
65-79	80.9%	58.3%	75.4%	78.0%	79.2%	81.2%	80.8%	86.1%
80+	83.4%	56.8%	67.9%	66.9%	71.8%	71.8%	71.2%	69.4%
Total A&H	77.9%	48.6%	71.7%	76.0%	78.1%	80.4%	80.8%	89.2%

Lives Exposed	1st 3 mo.	1	2	3	4	5	6-10	11+
18-34	82,006	256,159	68,389	9,634	17,505	1,572	148,352	11,494
35-49	128,416	358,347	108,729	19,299	38,082	1,258	221,467	50,058
50-64	122,128	329,338	123,006	20,941	43,805	35,263	260,413	122,917
65-79	39,386	220,120	184,424	199,834	249,379	216,007	676,606	68,580
80+	1,847	10,358	10,022	13,126	20,243	15,235	37,371	6,440
Total A&H	373,783	1,174,322	494,569	262,834	369,013	269,335	1,344,208	259,489

III. MORTALITY EXPERIENCE FOR UNDERWRITTEN LIFE PRODUCTS

This analysis developed q_x's using the number of actual deaths in a duration divided by life-years exposed. Life-years exposed is the number of years exposed to death in a given duration. Life-years exposed is adjusted

for partial lapse years. That is, if, for example, a lapse occurs after three months into a duration, this would be counted as 0.25 year exposed. If a death occurs during the duration, the policy is given a full year exposure to death. Data were requested on this basis, but contributions were not checked for consistency with this definition. Therefore, there is a possibility of some inconsistency of results.

Results were measured both in absolute terms (deaths and exposures) and as A/E ratios. For the results shown here, "expected" is treated in one of two alternative ways:

o 1975–80 Select and Ultimate Table, age last birthday, male and female
o 1975–80 Ultimate Table, age last birthday, male and female.

We have shown comparisons to both expected tables to aid in analysis. The standard deviation is estimated by using the traditional mortality table construction approach* and is computed by dividing the A/E ratio by the square root of the number of actual deaths. Two standard deviations are used to estimate 95% confidence using a normal distribution.

In using the standard deviation, note that the figures shown measure 95% confidence relative to the underlying expected table. If a different (for example, higher) expected table were used, the standard deviation would be different (lower) relative to that table, but the variation in expected deaths will remain the same.

We have presented mortality experience on underwritten business divided into two broad categories of underwriting methodology:

o *Application with Follow-up.* This includes policies for which a company, using its normal underwriting guidelines, will follow up some or all applications with a request for MIB and/or APS and/or paramedical and/or medical testing. As will be evident in reviewing the results, this category encompasses a wide range of procedures from little follow-up to "full" underwriting; thus the mortality results vary greatly. There is wide variance in acceptance criteria used by individual companies under direct response business, and therefore we must emphasize greatly the need for caution in interpreting the results.

o *Application Only.* This includes policies for which one or more health questions are asked on the application and the policy is accepted or declined on the basis of the questions asked. No additional follow-up is performed at the company level.

*Batten, Robert. *Mortality Table Construction.* Englewood Cliffs, N.J.: Prentice Hall, 1978, 223.

The applications were not studied for similarity or distinctions by company. For the application only business, a typical direct response two- to three-question accept/reject application is believed to be used normally, although the exact questions and the number of "sub-questions" varies by company. For the "with follow-up" business, it is believed the application ranges from a similar two- to three-question application to in-depth applications that more closely resemble the questions asked on agent nonmedical applications.

To improve statistical validity, it was necessary to combine the male and female data along with several issue age and durational cells. Therefore, less detailed results are shown in these tables. The expected q_x's were calculated at the individual cell (gender, specific duration, mid-point of 5-year age band) and then combined for presentation.

For the ultimate durations, only male data were available. Durations 11+ were chosen to represent ultimate rather than the typical actuarial use of durations 16+, because the Task Force believed any selection effects on this type of business would generally be worn off after ten durations.

Only term insurance was included in the analysis. Some whole life data were collected but were not credible and were left out of the study to prevent distortion.

Data were collected and analyzed on a per-life basis only, not per unit. The age for expected calculations was estimated as the central age of each cell, except that the central ages for cells 18–34 and 80+ were assumed to be 30 and 82, respectively.

As with the persistency analysis, companies were not always able to provide data in the exact form requested. One company was able to supply data only in a non-sex-distinct form. The company had stated that 80% of its business was male, so for measuring expected ratios, we split the business into 80% male and 20% female at each age. To the degree that this varies by age, this could cause some distortion in the analysis. Similarly, one company kept its records in decennial age groupings; before submitting its data, the company divided the data in half to fit the quinquennial age groups (for example, for age group 40–49, the assumption was made that half of the exposure and half the deaths fit into the 40–44 group and the other half fit into the 45–49 group). None of the data have been smoothed.

A. Summary of Mortality Experience for Application with Follow-up Underwriting Business

Table 1 summarizes the mortality experience for application with follow-up underwriting business. Results for duration 1–10 are shown by three broad age groupings and combined. As stated above, results are shown relative to both the 1975–80 Basic Select and Ultimate Table and to the Ultimate Table. Only male/female combined results are shown because of the lack of credible female data.

TABLE 1

MORTALITY EXPERIENCE FOR APPLICATION-WITH-FOLLOW-UP UNDERWRITING BUSINESS
FOR MALES AND FEMALES COMBINED

Duration	Life-Years Exposed	Actual Deaths	1975–1980 Select and Ultimate Table		1975–1980 Ultimate Table	
			A/E Ratio	2 Standard Deviations	A/E Ratio	2 Standard Deviations
Issue Age 18–34						
1	68,099	26	67.4%	26.7%	38.2%	15.1%
2	52,510	28	86.3	32.9	53.2	20.3
1–2	120,609	53	76.0	20.9	44.7	12.3
3–5	147,281	141	122.4	20.6	92.2	15.6
6–10	171,358	300	154.1	17.8	138.6	16.0
1–10	439,248	494	130.1%	11.7%	101.3%	9.1%
Issue Age 36–49						
1	76,155	38	55.1%	18.0%	25.6%	8.4%
2	62,908	43	53.6	16.4	31.2	9.6
1–2	139,064	80	54.3	12.1	28.3	6.3
3–5	202,290	434	110.4	10.6	83.2	8.0
6–10	142,732	474	104.2	9.6	89.6	8.2
1–10	484,086	988	99.2%	6.3%	74.1%	4.7%
Issue Age 50–74						
1	17,363	36	85.9%	28.6%	26.0%	8.7%
2	13,096	44	92.6	27.9	35.6	10.7
1–2	30,459	80	89.5	20.0	30.4	6.8
3–5	26,529	169	120.3	18.5	60.3	9.3
6–10	7,626	52	74.4	20.6	46.3	12.8
1–10	64,614	301	100.4%	11.6%	46.0%	5.3%
All Ages						
1	161,617	99	67.0%	13.5%	28.1%	5.7%
2	128,514	114	71.8	13.5	36.6	6.9
1–2	290,131	213	69.5	9.5	32.1	4.4
3–5	376,099	743	114.7	8.4	77.9	5.7
6–10	321,715	826	114.8	8.0	96.3	6.7
1–10	987,947	1,782	106.4%	5.0%	72.0%	3.4%

Table 2 shows the ultimate results, combined for durations 11+, generally by five-year attained age groupings. Note that Table 2 shows male lives only, whereas Table 1 is male/female combined. Table 1 is approximately 80% male. There was not enough credible female experience to be included for durations 11+.

TABLE 2

MORTALITY EXPERIENCE FOR APPLICATION-WITH-FOLLOW-UP UNDERWRITING BUSINESS
FOR MALES ONLY
ULTIMATE (DURATION 11+)

| | | | 1975–1980 Ultimate Table | |
Attained Age	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
18–34	87,653	103	104.0%	20.5%
35–39	50,998	84	124.8	27.2
40–44	37,748	134	180.2	31.1
45–49	42,588	201	137.6	19.4
35–49	131,334	419	145.6%	14.2%
50–54	24,880	200	140.5%	19.9%
55–59	21,168	265	134.9	16.6
60–64	20,790	44	139.4	13.2
65–69	17,726	568	128.9	10.8
70–74	14,469	646	112.2	8.8
75–79	10,479	702	106.4	8.0
80+	5,389	526	99.4	8.7
50–80+	114,901	3,351	117.1%	4.0%
All Ages	333,888	3,873	119.2%	3.8%

Overall, A/E ratios are high relative to recent reported experience for standard nonmedical individually underwritten insurance. The overall ratio relative to the 1975–80 Basic Select and Ultimate Table for durations 1–10 combined was 106.4%. The ratio for ultimate durations (11+) relative to the 1975–80 Ultimate Table was 119.2%. Detailed durational experience was not captured for the end of the normal Select Table (durations 11–15), so that there is a bit of a discontinuity measuring between these two numbers.

Comparable ratios to the 1975–80 Select and Ultimate Table for standard nonmedical individually underwritten policies as reported in the *1991–92 TSA Reports* are 86.5% (between 1987 and 1988 anniversaries) for the select period (policy years 1–15) and 101.0% (between 1983 and 1988 anniversaries) for the ultimate durations.

Additional analysis showed that individual company experience varies greatly within the aggregate company data reported in Table 1. We note that only four companies contributed data to this segment. In addition to Table 1, which aggregates results, we also measured the range of results relative to expected with either the highest or lowest contributed results removed. If the company with the worst experience results is removed, the resulting A/E Select and Ultimate ratio decreases from 106.4% to 61.4% (with two standard deviations, 4.5%). If the company contributing the best results is removed, the resulting A/E Select and Ultimate ratio increases from 106.4% to 167.4% (with two standard deviations, 9.2%).

While we expected a range of mortality results by company, the very broad range of reported mortality is greater than was anticipated by the task force. Specific data were not available to determine the reasons for this differential but may include:

○ Broad differences in amount of underwriting follow-up, which ranges from MIB only to APS to full medical.
○ Differences in the underlying groups by company. Both strong affinity groups and broad market solicitation are included in this analysis.
○ Different levels of response rates and marketing effectiveness, which lead to different levels of antiselection.
○ Product variations including smoker and nonsmoker product splits.
○ Variations in average size, leading to more or to less affluent groups.
○ Variations in persistency, resulting in additional antiselection by duration.
○ Variations in the underwriting questions in the application, particularly with regard to AIDS. Because the observed period is 1990–1992 anniversaries, durations 5–9 include issues from 1984 through 1986. This was a period in which significant AIDS antiselection occurred prior to improvement of underwriting standards to eliminate HIV/AIDS applicants.

By duration, Table 1 shows a sharp increase in A/E ratios for most ages in duration 3. Compared to the Select and Ultimate Table, the ratios are 69.5% for durations 1–2, 114.7% for durations 3–5, and 114.8% for durations 6–10. This is not a normal selection wear-off pattern. The task force speculates that the mortality results during these first two years are aided greatly by recision of contested claims. Beginning in duration 3, the ability to deny claims is removed because of expiry of the incontestible clause, and at this time some antiselection is evidenced. We note only that paid deaths were collected in the survey. Data on deaths that were rescinded were not collected, so this hypothesis was not verified.

The pattern of increase by duration, particularly at the end of the second year, was less pronounced in the company contributing favorable A/E results. We understand that this company had a nonsmoker/smoker distinct rating, a larger average size policy, and more complete underwriting follow-up procedures. Durational results with the data of this company removed are summarized below:

Duration	Ratio to 1975–80 Select and Ultimate	
	All Contributors	Best Removed
1–2	69.5%	93.7%
3–5	114.7	181.9
6–10	114.8	185.0

The total A/E ratio for durations 11+ as shown in Table 2 is 119.2%. This is reasonably in line with the experience shown for durations 6–10. Note that the durational results can be distorted because of differences in the relative proportion of exposures by contributing companies between the select and the ultimate portions of this study.

Overall results by age for the entire select period showed the best experience for age 35–49 and the worst experience for the youngest ages. We note again that patterns of results by age and by duration have been affected by the relative proportion of exposures by contributing companies. The highest ratios during the ultimate period were for attained ages 40–44, while the more favorable experience was under age 35 and over age 69. It is difficult to evaluate the extent to which results by age are affected by AIDS claims.

B. Summary of Mortality Experience for Application-Only Business

Table 3 shows results for the business underwritten by application only on an accept/reject basis. Four companies also contributed to this portion of the study, but note that the exposure here is only 4% of the exposure for the prior, "with follow-up" analysis. There are only 322 total deaths, so that there is significantly less credibility to these data. Standard deviations show significantly wider ranges here than for the application with follow-up category. The select experience for application only presented in the same form as in Table 1. Data beyond duration 10 were not available.

TABLE 3

Mortality Experience for Application-Only Underwriting Business for Males and Females Combined

Duration	Life-Years Exposed	Actual Deaths	1975–1980 Select and Ultimate Table		1975–1980 Ultimate Table	
			A/E Ratio	2 Standard Deviations	A/E Ratio	2 Standard Deviations
Issue Age 18–34						
1	0	0				
2	0	0				
1–2	0	0				
3–5	0	0				
6–10	10.328	33	318.8%	111.0%	294.3%	102.5%
1–10	10.328	33	318.8%	111.0%	294.3%	102.5%
Issue Age 35–49						
1	2,026	13	716.5%	397.5%	320.1%	177.6%
2	2,380	16	545.2	272.6	310.1	155.1
1–2	4,406	29	610.7	226.8	314.5	116.8
3–5	8,378	44	282.5	85.2	206.7	62.3
6–10	8,591	55	205.8	55.5	190.9	51.5
1–10	21,375	128	272.0%	48.1%	215.8%	38.2%
Issue Age 50–74						
1	1,542	33	492.6%	171.5%	155.3%	54.1%
2	809	38	1,480.2	480.3	581.0	188.5
1–2	2,351	71	766.3	181.9	255.5	60.6
3–5	4,200	51	241.0	67.5	119.1	33.3
6–10	2,789	39	162.4	52.0	120.6	38.6
1–10	9,340	161	295.7%	46.6%	156.4%	24.6%
All Ages						
1	3,568	46	540.4%	159.3%	181.7%	53.6%
2	3,189	54	981.5	267.1	461.6	125.6
1–2	6,757	100	713.6	142.7	270.2	54.0
3–5	12,578	95	258.6	53.1	148.2	30.4
6–10	21,708	127	207.8	36.9	175.5	31.1
1–10	41,043	322	287.9%	32.1%	185.6%	20.7%

The overall A/E ratio was very high, compared to experience reported for standard nonmedical and individually underwritten insurance and also compared to the direct response experience on application with follow-up underwriting. A/E ratios are generally higher in all ages and durations and show a slope that is more typical of guaranteed issue business. Overall the experience was 288% of the 1975–80 Select and Ultimate Table. The ratios did not show a significant variation of results by age, but again we caution that the exposures were limited.

The high A/E ratios indicate that the "no follow-up" business has been subject to significant antiselection, at least for the companies contributing to our study. The impact of AIDS is once again not explicitly known.

IV. MORTALITY EXPERIENCE FOR GUARANTEED ISSUE LIFE PRODUCTS

The analysis approach to guaranteed issue products was the same as that for underwritten products. For guaranteed issue products, the expected table used is the U.S. Life 1979–81 Male/Female White Table.

The products presented here are all graded death benefit products, which have the shared characteristics of a limited-death-benefit feature in the first few durations (usually two to three). During this period, the death benefit may be a return-of-premium or a pre-determined low face amount. For accidental death, the full face amount is often paid. The term product may be level or increasing premium and also may be level or decreasing face amount.

As with underwritten mortality, data were collected and analyzed on a per-life basis only, not per unit. The age for expected calculations was estimated as the central age of each cell, except that the central ages for cells 18–34 and 80+ were assumed to be 30 and 82, respectively.

As with the persistency analysis, companies were not always able to provide data in the exact form requested. One company was able to supply data only in a non-sex-distinct form. The company had stated that 80% of its business was male, so for measuring expected ratios, we split the business into 80% male and 20% female at each age. To the degree that this varies by age, this could cause some distortion in the analysis. Similarly, one company kept its records in decennial age groupings; before submitting its data, the company divided the data in half to fit the quinquennial age groups (for example, for age group 40–49, the assumption was made that half of the exposure and half the deaths fit into the 40–44 group and the other half fit into the 45–49 group). None of the data has been smoothed.

Data were not analyzed separately for individual contributing company. Unlike the underwritten term data, no significant skewing by company seemed to be present in the underlying results.

A. Summary of Mortality Experience for Whole Life Products

Table 4 summarizes the A/E ratios for the GBWL product for each of the first ten durations, each age group, and males, females and combined.

TABLE 4

ACTUAL-TO-EXPECTED RATIOS FOR GUARANTEED ISSUE, GRADED DEATH BENEFIT
WHOLE LIFE PRODUCTS

Duration	A/E Ratios							
	45–49	50–54	55–59	60–64	65–69	70–74	75–79	All Ages
Males								
1	1.940	2.269	2.391	2.157	1.556	1.260	1.380	1.676
2	5.011	2.686	2.294	1.862	1.623	1.239	0.838	1.626
3	2.809	2.478	2.213	1.893	1.610	1.200	1.006	1.639
4	2.415	2.617	2.158	1.819	1.424	1.131	0.986	1.564
5	3.613	2.568	2.075	1.758	1.419	1.165	0.759	1.560
6	2.449	2.275	0.000	0.000	1.232	1.250	0.685	1.339
7	2.226	2.353	0.000	1.563	1.183	1.044	1.041	1.360
8	2.203	2.184	0.000	1.527	1.193	1.056	0.949	1.346
9	2.378	2.302	0.000	0.000	1.114	0.948	1.100	1.242
10	0.000	0.000	0.000	1.391	1.208	1.015	0.797	1.239
All Durations	2.760	2.411	2.217	1.737	1.384	1.161	0.914	1.504
Females								
1	1.640	3.184	2.048	1.618	1.569	1.366	0.934	1.568
2	4.283	2.789	2.362	1.915	1.598	1.327	1.081	1.641
3	2.576	2.448	2.009	1.864	1.650	1.307	1.060	1.599
4	1.345	2.859	1.930	1.893	1.590	1.253	0.943	1.562
5	2.171	2.851	1.875	1.787	1.388	1.197	0.811	1.466
6	3.038	2.385	1.840	1.589	1.314	1.141	0.927	1.425
7	2.533	2.710	1.800	1.525	1.153	1.214	0.959	1.382
8	3.344	1.857	1.857	1.435	1.192	1.067	0.752	1.298
9	2.701	1.600	1.904	1.351	0.976	0.923	0.828	1.175
10	2.121	1.722	1.758	1.298	1.007	0.819	0.806	1.147
All Durations	2.551	2.455	1.924	1.629	1.349	1.183	0.921	1.435
Males and Females Combined								
1	1.889	2.611	2.279	1.991	1.560	1.295	1.022	1.640
2	4.773	2.725	2.318	1.881	1.614	1.275	0.940	1.632
3	2.714	2.467	2.136	1.881	1.626	1.251	1.034	1.622
4	1.990	2.702	2.074	1.848	1.493	1.190	0.963	1.564
5	3.065	2.668	2.002	1.769	1.406	1.180	0.789	1.520
6	2.683	2.317	1.840	1.589	1.268	1.195	0.837	1.388
7	2.342	2.468	1.800	1.548	1.169	1.132	0.988	1.371
8	2.644	2.071	1.857	1.493	1.193	1.062	0.824	1.323
9	2.487	2.083	1.904	1.351	1.054	0.935	0.929	1.205
10	2.121	1.722	1.758	1.361	1.120	0.908	0.803	1.195
All Durations	2.678	2.428	2.057	1.691	1.370	1.171	0.918	1.474

Table 5 presents the same information in more detail: life-years exposed, actual deaths, and standard deviations as well as A/E ratios. For cells in which experience is limited, we have shown A/E ratios of zero. In measuring aggregate ratios across ages or across durations, note that omitted cells can affect these comparisons. For instance, in Table 4, for most age bands, the male and female A/E ratios are similar. However, at ages 55–59, the male ratio is noticeably higher than the female ratio. However, for this age group, only the first five durations of male experience are presented; therefore the difference is due more to duration weighting than to sex differences.

Overall, A/E ratios are greater than 100% at all ages and durations except for a few later durations above age 75. The ratios show very little difference by sex but do show a generally declining pattern as age increases and as duration increases.

TABLE 5

MORTALITY EXPERIENCE FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT
WHOLE LIFE PRODUCTS

	Male				Female			
Duration	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
				Ages 45–49				
1	2,306	23	1.940	80.92%	871	4	1.640	164.02%
2	1,846	53	5.011	137.65	1,657	22	4.283	182.62
3	1,764	32	2.809	99.83	2,264	20	2.576	115.20
4	1,916	33	2.415	84.49	2,373	12	1.345	77.66
5	1,845	52	3.613	100.52	2,135	19	2.171	99.61
6	1,585	33	2.449	85.28	1,988	27	3.038	116.95
7	1,395	29	2.226	82.66	1,618	20	2.533	113.28
8	1,061	24	2.203	89.92	1,293	23	3.344	139.44
9	1,159	31	2.378	85.40	1,151	18	2.701	127.32
10	0	0	0.000	0.00	1,276	17	2.121	102.91
All Durations	14,878	309	2.760	31.40%	16,625	182	2.551	37.81%
				Ages 50–54				
1	6,119	118	2.269	41.77%	6,957	99	3.184	63.99%
2	5,581	140	2.686	45.40	6,540	89	2.789	59.12
3	4,650	118	2.478	45.56	5,196	68	2.448	59.52
4	5,310	156	2.617	41.86	5,599	93	2.859	59.39
5	5,469	172	2.568	39.13	5,846	105	2.851	55.74
6	4,467	136	2.275	39.02	5,294	86	2.385	51.45
7	4,041	138	2.333	39.71	4,476	90	2.710	57.13
8	3,623	127	2.184	38.76	3,785	57	1.857	49.19
9	3,747	152	2.302	37.35	3,375	48	1.600	46.18
10	0	0	0.000	0.00	3,156	53	1.722	47.32
All Durations	43,006	1,258	2.411	13.59%	50,223	787	2.455	17.51%

TABLE 5—Continued

Duration	Male				Female			
	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
Ages 55–59								
1	8,814	282	2.391	28.48%	8,460	118	2.048	37.71%
2	7,504	252	2.294	28.90	8,215	144	2.362	39.37
3	6,157	219	2.213	29.93	7,365	120	2.009	36.68
4	7,197	274	2.158	26.09	8,275	142	1.930	32.40
5	7,695	309	2.075	23.62	8,751	160	1.875	29.65
6	0	0	0.000	0.00	7,744	152	1.840	29.84
7	0	0	0.000	0.00	6,740	141	1.800	30.32
8	0	0	0.000	0.00	5,903	138	1.857	31.61
9	0	0	0.000	0.00	5,332	138	1.904	32.42
10	0	0	0.000	0.00	5,068	131	1.758	30.73
All Durations	37,368	1,335	2.217	12.14%	71,853	1,384	1.924	10.34%
Ages 60–64								
1	12,976	593	2.157	17.71%	11,412	197	1.618	23.05%
2	10,598	457	1.862	17.42	11,865	264	1.915	23.57
3	8,083	386	1.893	19.27	10,595	249	1.864	23.64
4	9,316	464	1.819	16.89	12,077	311	1.893	21.48
5	9,949	519	1.758	15.43	13,046	343	1.787	19.31
6	0	0	0.000	0.00	10,654	270	1.589	19.34
7	6,956	380	1.563	16.04	9,120	242	1.525	19.61
8	6,782	394	1.527	15.38	7,932	217	1.435	19.48
9	0	0	0.000	0.00	7,114	201	1.351	19.05
10	6,957	437	1.391	13.31	6,514	194	1.298	18.64
All Durations	71,617	3,630	1.737	5.77%	100,328	2,487	1.629	6.53%

TABLE 5—*Continued*

Duration	Male				Female			
	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
Ages 65–69								
1	14,183	710	1.556	11.68%	11,826	296	1.569	18.24%
2	11,707	664	1.623	12.60	12,770	355	1.598	16.96
3	8,370	513	1.610	14.22	11,322	356	1.650	17.49
4	9,050	535	1.424	12.32	12,577	418	1.590	15.55
5	9,328	598	1.419	11.61	13,168	419	1.388	13.56
6	6,478	391	1.232	12.46	10,220	338	1.314	14.29
7	5,621	352	1.183	12.61	8,955	285	1.153	13.66
8	5,054	344	1.193	12.87	7,844	283	1.192	14.17
9	4,336	297	1.114	12.93	6,333	205	0.976	13.64
10	3,678	295	1.208	14.06	5,213	191	1.007	14.58
All Durations	77,804	4,698	1.384	4.04%	100,227	3,147	1.349	4.81%
Ages 70–74								
1	9,359	578	1.260	10.48%	8,901	306	1.366	15.62%
2	7,136	468	1.239	11.45	9,693	355	1.327	14.09
3	4,700	322	1.200	13.38	8,003	317	1.307	14.69
4	4,856	338	1.131	12.31	8,373	348	1.253	13.44
5	4,856	376	1.165	12.02	8,150	355	1.197	12.71
6	2,764	248	1.250	15.87	5,065	232	1.141	14.98
7	2,332	189	1.044	15.19	4,351	236	1.214	15.81
8	2,098	186	1.056	15.49	3,808	203	1.067	14.98
9	1,763	152	0.948	15.37	3,275	169	0.923	14.20
10	1,425	143	1.015	16.98	2,700	138	0.819	13.95
All Durations	41,290	2,999	1.161	4.24%	62,318	2,658	1.183	4.59%
Ages 75–79								
1	212	21	1.380	60.21%	1,546	58	0.934	24.54%
2	1,214	79	0.838	18.86	1,533	74	1.081	25.12
3	651	55	1.006	27.14	1,171	62	1.060	26.93
4	624	56	0.986	26.36	1,233	65	0.943	23.40
5	573	43	0.759	23.15	1,225	62	0.811	20.61
6	272	20	0.685	30.64	714	46	0.927	27.34
7	215	26	1.041	40.84	595	44	0.959	28.91
8	202	24	0.949	38.73	514	33	0.752	26.18
9	175	26	1.100	43.14	421	33	0.828	28.84
10	129	15	0.797	41.15	343	29	0.806	29.93
All Durations	4,267	365	0.914	9.57%	9,294	506	0.921	8.19%

Table 6 shows results for durations 11+ by five-year *attained* age groups. In comparing the A/E results from Table 4, there is a sharp discontinuity between duration 10 and the durations 11+ business. The level of homogeneity of data is unclear at these durations; it is possible that later durations represent a distinct class of business that is either not included or is a lesser portion of total exposure of earlier durations. We note that the exposure at duration 10 is 36,459, whereas the exposure for all durations 11+ is only 94,441.

TABLE 6

MORTALITY EXPERIENCE FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT
WHOLE LIFE PRODUCTS DURATION 11+

	Male				Female			
Attained Age	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
55–59	7,870	375	3.561	36.78%	13,305	318	3.510	39.36%
60–64	13,409	718	2.527	18.86	20,895	605	2.714	22.06
65–69	15,282	940	1.911	12.47	23,680	841	2.227	15.36
All Ages	36,561	2,033	2.307	10.23%	57,880	1,764	2.552	12.15

Tables 7 and 8 show results for business that could be identified as either current customer or affinity. Separate broad market business was not available for the GBWL product. The total affinity exposure is 115,383 lives, which is 16% of the total GBWL exposure. The total current customer exposure is 78,049, which is 11% of the total GBWL exposure. The A/E ratios for the affinity markets are lower than those for the current customer business. As with the general pattern of ratios grading down with attained age and duration, this difference is more noticeable at the younger ages and at the early durations. Reasons for differences in affinity and current customer markets cannot readily be determined because of the different mixes of business provided by contributing companies. Potential reasons for the differences may include:
○ Response rates (both gross and net) may have been better for affinity markets, which would reduce the impact of antiselection.
○ Lapse rates may be better for affinity markets. This would contribute to a less antiselective group over time.

• The underlying mortality may be better for the names solicited in the affinity market because the nature of the affinity may limit the proportion of very poor risks in the exposure. The current customer lists are more likely to have come from a broad market base such as a television/newspaper source.

TABLE 7

MORTALITY EXPERIENCE FOR WHOLE LIFE PRODUCTS FOR CURRENT CUSTOMERS

Duration	55–59		60–64		65–69		70+		All Ages	
	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E
Males										
1	1,883	2.897	2,857	2.445	3,124	1.900	2,205	1.323	10,069	1.886
2	2,019	2.605	2,874	2.103	3,543	1.865	2,235	1.352	10,671	1.797
3	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
4	0	0.000	3,895	1.885	3,712	1.427	2,045	1.075	9,652	1.432
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	3,902	2.740	9,626	2.263	10,379	1.848	6,485	1.220	30,392	1.745
Females										
1	2,526	2.325	3,912	1.797	4,541	1.602	4,857	1.302	15,836	1.529
2	2,661	2.077	4,336	1.866	5,371	1.594	5,357	1.321	17,725	1.530
3	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
4	0	0.000	4,620	1.922	5,353	1.512	4,123	1.130	14,096	1.415
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	5,187	2.192	12,868	1.956	15,265	1.673	14,337	1.239	47,657	1.519
Males and Females Combined										
1	4,409	2.665	6,769	2.180	7,665	1.775	7,062	1.311	25,905	1.717
2	4,680	2.393	7,210	2.001	8,914	1.749	7,592	1.334	28,396	1.666
3	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
4	0	0.000	8,515	1.899	9,064	1.463	6,169	1.104	23,748	1.425
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	9,089	2.519	22,494	2.141	25,643	1.774	20,823	1.230	78,049	1.638

TABLE 8

MORTALITY EXPERIENCE FOR WHOLE LIFE PRODUCTS FOR AFFINITY CUSTOMERS

Duration	55–59		60–64		65–69		70–		All Ages	
	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E
Males										
1	5,759	2.050	8,338	1.834	9,193	1.328	5,968	1.200	29,258	1.456
2	3,712	1.675	4,936	1.452	5,227	1.363	3,294	1.101	17,169	1.328
3	0	0.000	3,052	1.481	2,979	1.353	2,116	1.235	8,146	1.409
4	2,278	1.761	2,912	1.543	2,809	1.325	1,372	1.164	9,370	1.386
5	0	0.000	0	0.000	0	0.000	2,141	1.049	2,141	2.060
Total	11,749	2.128	19,237	1.773	20,207	1.454	14,891	1.153	66,085	1.449
Females										
1	4,664	1.637	5,502	1.209	5,205	1.277	3,581	1.175	18,952	1.267
2	3,559	1.893	4,254	1.153	4,179	1.279	2,921	1.035	14,913	1.231
3	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
4	3,128	1.726	4,046	1.655	3,978	1.482	2,188	1.163	13,340	1.443
5	0	0.000	0	0.000	0	0.000	2,093	1.058	2,093	2.368
Total	11,351	2.047	13,802	1.772	13,362	1.862	10,784	1.132	49,298	1.524
Males and Females Combined										
1	10,423	1.930	13,840	1.678	14,398	1.317	9,549	1.194	48,210	1.410
2	7,271	1.746	9,190	1.362	9,406	1.339	6,215	1.079	32,082	1.298
3	0	0.000	3,052	1.935	2,979	1.894	2,116	1.236	8,146	1.659
4	5,406	1.746	6,957	1.589	6,786	1.390	3,560	1.164	22,710	1.410
5	0	0.000	0	0.000	0	0.000	4,234	1.052	4,234	2.170
Total	23,100	2.101	33,039	1.744	33,569	1.557	25,675	1.146	115,383	1.472

No attempt was made to compare these results to any other *TSA Reports* data. The guaranteed issue business is significantly different from any underwritten business previously published in the *TSA Reports*.

B. *Summary of Mortality Experience for Graded Benefit Term Life Products*

Table 9 summarizes the A/E ratios for the GBTL product for each of the first five durations, each age group, and males, females and combined. Table 10 presents the same information in more detail: life-years exposed, actual deaths, and standard deviations as well as the A/E ratios. For cells in which experience is limited, we have shown A/E ratios of zero.

TABLE 9

ACTUAL-TO-EXPECTED RATIOS FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT
TERM PRODUCTS

	A/E Ratios					
Duration	50–54	55–59	60–64	65–69	70–74	All Ages
			Males			
1	0.000	2.971	2.309	1.827	0.000	2.218
2	2.887	2.825	2.256	1.859	0.000	2.184
3	3.392	2.515	2.200	1.845	1.838	2.120
4	3.306	2.425	1.906	1.512	1.459	1.861
5	2.547	2.458	1.887	1.517	1.429	1.823
6	2.472	0.000	0.000	1.451	1.180	1.512
All Durations	2.782	2.506	1.984	1.583	1.394	1.851
			Females			
1	0.000	0.000	2.559	2.420	0.000	2.478
2	3.895	3.595	2.884	1.885	0.000	2.611
3	3.403	3.426	2.514	1.970	1.614	2.311
4	3.904	2.608	2.538	1.851	1.458	2.142
5	3.038	2.333	2.098	1.754	1.506	1.932
6	2.551	2.267	1.890	1.526	1.266	1.736
All Durations	3.118	2.522	2.222	1.768	1.424	1.990
			Males and Females Combined			
1	0.000	2.971	2.385	2.004	0.000	2.284
2	3.224	3.058	2.438	1.866	0.000	2.308
3	3.395	2.776	2.284	1.880	1.751	2.176
4	3.491	2.482	2.087	1.623	1.459	1.953
5	2.703	2.417	1.950	1.602	1.462	1.861
6	2.498	2.267	1.890	1.479	1.216	1.627
All Durations	2.890	2.512	2.072	1.645	1.406	1.902

TABLE 10

MORTALITY EXPERIENCE FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT TERM PRODUCTS

Duration	Male				Female			
	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations	Life-Years Exposed	Actual Deaths	A/E Ratio	2 Standard Deviations
Ages 50–54								
1	0	0	0.000	0.00%	0	0	0.000	0.00%
2	1,261	34	2.887	99.02	1,210	23	3.895	162.44
3	2,813	98	3.392	68.53	2,486	45	3.403	101.44
4	6,452	240	3.306	42.69	5,618	127	3.904	69.29
5	8,256	258	2.547	31.71	7,547	144	3.038	50.64
6	7,952	263	2.472	30.48	7,828	136	2.551	43.75
All Durations	26,734	893	2.782	18.62%	24,689	475	3.118	28.61%
Ages 55–59								
1	1,987	79	2.971	66.86%	0	0	0.000	0.00%
2	1,886	78	2.825	63.97	1,612	43	3.595	109.65
3	4,657	188	2.515	36.69	3,707	103	3.426	67.52
4	8,705	372	2.425	25.15	7,721	179	2.608	38.98
5	10,397	494	2.458	22.12	10,025	228	2.333	30.90
6	0	0	0.000	0.00	10,087	244	2.267	29.03
All Durations	27,632	1,211	2.506	14.40%	33,152	797	2.522	17.87%
Ages 60–64								
1	2,023	99	2.309	46.42%	1,758	48	2.559	73.87%
2	2,488	130	2.256	39.57	2,029	68	2.884	69.95
3	6,683	371	2.200	22.85	4,866	154	2.514	40.51
4	12,113	632	1.906	15.16	9,859	340	2.538	27.52
5	13,835	775	1.887	13.56	11,934	368	2.098	21.87
6	0	0	0.000	0.00	11,347	342	1.890	20.44
All Durations	37,142	2,007	1.984	8.86%	41,793	1,320	2.222	12.23%
Ages 65–69								
1	1,905	112	1.827	34.53%	1,632	63	2.420	60.98%
2	2,647	172	1.859	28.35	2,043	67	1.885	46.05
3	5,770	405	1.845	18.33	4,524	170	1.970	30.23
4	9,121	572	1.512	12.64	8,804	341	1.851	20.05
5	9,007	617	1.517	12.21	9,893	398	1.754	17.58
6	6,919	492	1.451	13.08	8,306	319	1.526	17.09
All Durations	35,369	2,370	1.583	6.50%	35,202	1,358	1.768	9.60%
Ages 70–74								
1	0	0	0.000	0.00%	0	0	0.000	0.00%
2	0	0	0.000	0.00	0	0	0.000	0.00
3	1,221	128	1.838	32.49	1,474	72	1.614	38.04
4	3,011	270	1.459	17.76	3,911	189	1.458	21.21
5	3,919	372	1.429	14.82	5,202	285	1.506	17.85
6	3,411	289	1.180	13.88	4,465	227	1.266	16.81
All Durations	11,562	1,059	1.394	8.56%	15,052	773	1.424	10.25%

The A/E ratios for the GBTL product are generally higher at all ages and durations than those for the GBWL product. This may be indicative of market differences or additional antiselection from the term product, which generally has a lower unit premium than the GBWL product. In addition (as shown earlier in this report), the persistency for the GBTL product is significantly worse than the persistency for the comparable GBWL product. As with the GBWL product, the A/E mortality ratios decrease with both increasing age and increasing duration.

Table 11 summarizes the GBTL products for broad market and Table 12 shows the GBTL results for the affinity market. While the affinity market exposure is relatively small, only 8,462 lives, the results show mortality ratios not too dissimilar from those of the whole life affinity group and significantly better results than the total GBTL line. The broad market ratios, which include 144,845 lives exposed (50% of the total exposure for this product) show results substantially higher than the affinity market and somewhat higher than the aggregate market. We note that the remaining difference between the exposures in Table 11 and 12 and those underlying Table 9 (288,327 lives exposed) are caused by data included in the total that were not specifically identified and separable by market.

An explanation for the differences in mortality by market is again not readily discernible but may be due to the same reasons stated above.

C. Interpretation of Results

In using the analyses in this report, it must be recognized that the data supplied are far from homogeneous. Within the product groupings shown, there are some very disparate product types. In addition, different submitting companies have different levels of affinity, billing methods, market types, and other factors that cause individual subsets of these data to have different lapsation than the aggregate. Companies entering and exiting business lines may have provided data for a few durations only. This can cause changes in the overall experience due to different weightings across durations. In addition, lapse conservation methods vary by company and also over time. This will have an effect on overall persistency and possibly on mortality.

Direct response products often use upgrades or add-ons after the initial issue, and we believe that these affect persistency and mortality. After much discussion, the Task Force concluded that useful information could not feasibly be obtained on upgrades. The impact of upgrade riders and the difficulty in capturing information were part of the rationale for doing the study

TABLE 11

MORTALITY EXPERIENCE FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT TERM PRODUCTS
FOR THE BROAD MARKET

Duration	50 54		55–59		60 64		65 69		70+		All Ages	
	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E
Males												
1	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
2	530	3.030	894	4.126	1,196	2.383	0	0.000	0	0.000	2,620	2.952
3	1,594	4.093	2,713	2.526	3,915	2.349	3,104	1.973	0	0.000	11,326	2.319
4	4,553	3.456	5,791	2.323	8,037	1.990	5,346	1.569	0	0.000	23,727	2.017
5	6,858	2.662	8,413	2.533	11,161	1.890	6,627	1.601	0	0.000	33,059	1.984
Total	13,535	3.083	17,811	2.530	24,309	2.009	15,077	1.658	0	0.000	70,732	2.071
Females												
1	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
2	0	0.000	832	4.050	1,101	3.830	984	2.395	0	0.000	2,917	3.179
3	1,457	4.515	2,229	3.872	2,888	3.025	2,329	2.297	0	0.000	8,903	2.962
4	3,965	4.574	5,414	2.846	6,869	2.571	5,692	1.957	3,317	1.483	25,257	2.230
5	6,278	3.044	8,313	2.381	9,843	2.156	7,923	1.772	4,679	1.480	37,036	1.942
Total	11,700	3.707	16,788	2.770	20,701	2.476	16,928	1.926	7,996	1.483	74,113	2.174
Males and Females Combined												
1	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
2	530	3.030	1,726	4.101	2,297	2.840	984	2.395	0	0.000	5,537	3.052
3	3,051	4.229	4,942	2.921	6,803	2.531	5,433	2.061	0	0.000	20,229	2.499
4	8,518	3.802	11,205	2.491	14,906	2.163	11,038	1.705	3,317	1.483	48,984	2.102
5	13,136	2.784	16,726	2.483	21,004	1.971	14,550	1.665	4,679	1.480	70,095	1.967
Total	25,235	3.276	34,599	2.608	45,010	2.148	32,005	1.755	7,996	1.483	144,845	2.112

TABLE 12

MORTALITY EXPERIENCE FOR GUARANTEED ISSUE GRADED-DEATH-BENEFIT TERM PRODUCTS
FOR THE AFFINITY MARKET

Duration	50–54		55–59		60–64		65–69		70+		All Ages	
	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E	Exp.	A/E
Males												
1	0	0.000	1,259	2.137	1,213	1.284	1,133	1.536	0	0.000	3,605	1.582
2	0	0.000	409	1.169	352	1.595	400	1.860	0	0.000	1,161	1.636
3	0	0.000	0	0.000	125	0.634	139	1.324	0	0.000	264	1.066
4	83	1.071	78	2.910	76	1.442	75	1.607	72	0.678	384	1.342
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	83	1.071	1,746	1.942	1,766	1.305	1,747	1.598	72	0.678	5,414	1.537
Females												
1	0	0.000	0	0.000	830	1.242	786	1.196	0	0.000	1,616	1.215
2	0	0.000	285	3.310	221	0.389	246	1.635	0	0.000	752	1.674
3	187	0.000	136	4.533	115	2.763	129	2.032	113	0.292	680	1.591
4	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	187	0.000	421	3.729	1,166	1.243	1,161	1.401	113	0.292	3,048	1.408
Males and Females Combined												
1	0	0.000	1,259	2.137	2,043	1.273	1,919	1.449	0	0.000	5,221	1.504
2	0	0.000	694	1.728	573	1.306	646	1.807	0	0.000	1,913	1.645
3	187	0.000	136	4.533	240	1.304	268	1.549	113	0.292	944	1.343
4	83	1.071	78	2.910	76	1.442	75	1.607	72	0.678	384	1.342
5	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000
Total	270	0.519	2,167	2.151	2,932	1.289	2,908	1.549	185	0.510	8,462	1.506

on a per-policy basis, rather than a face amount basis. The durational persistency is based on the initial issue date of a policy. If a rider is added in subsequent durations, this rider is not separately identified for the study. However, an add-on policy issued to an existing customer is treated as a separate policy and a new issue.

In summary, the results contained in this study are based on combinations of heterogeneous data. Any individual company's results may vary over a great range. These results may not be representative of experience for other companies during the same exposure period and should be used only with caution in attempting to predict future experience.

V. ACKNOWLEDGMENT

This report represents the first time that a study has been performed on industry guaranteed issue persistency and mortality data for direct response business. The Task Force recognizes the difficulty in asking companies to spend time and energy to forward data and gives a heartfelt thanks to all contributors. We hope that this will be a springboard study and that additional, updated, and broader persistency studies on industrywide basis will be performed and published in the future.