

Underwriting

- A. Is it practical to broaden the standard class at the younger ages by using extra deaths per thousand as the criterion for class measurement or by accepting a higher percentage of mortality than at the higher ages?
- B. Do problems on overinsurance, particularly at the younger ages, arise as a result of the emphasis upon the family income and other forms of additional term insurance and the increased amounts being made available supplemental to basic permanent insurance?
- C. Are there any recent developments or any new mortality experience on underwriting individual policies by quasi-group methods such as "guaranteed issue"?
- D. Is it feasible to take smoking habits into account in underwriting life insurance risks? Are there presently any statistics which would be useful in developing appropriate underwriting rules?

Philadelphia Regional Meeting

MR. FRANK H. DAVID: In deciding what risks to put in the standard class, the criterion ought to be: how far may this class be broadened without appreciably increasing standard rates? The effect of including a group of risks known to be subject to some extra mortality depends on two things: the extra deaths per thousand for this group, and its size in relation to the total standard class. I am talking only about a group with mortality fairly close to standard; no reasonable classification system would accept at standard rates a group, no matter how small, known to be highly substandard.

Since medical underwriting manuals express the extra hazard for most impairments in terms of debits, implying a percentage of extra mortality, it does not seem practical to use extra deaths per thousand directly as the criterion for class measurement, as suggested in the question. However, it is practical to accept a higher percentage of mortality at young issue ages than at older ones. The following table, which is based on inter-company experience between 1953 and 1958 anniversaries, shows the average annual extra deaths per \$1,000 equivalent to 25% and 50% extra mortality over a 20 year period.

The table shows that it would be as reasonable to accept 50% extra mortality at standard rates at young issue ages as 25% extra mortality at older ones. At ages under 30, less than 5% of applicants would be classified as subject to 30% to 50% extra mortality. Accepting these applicants at standard rates would raise the annual mortality cost by less than 5 cents per \$1,000. The figures apply to a 20 year period, but the introduction of an interest discount would probably offset the effect of extending them to a whole life plan.

Thus at young issue ages a case can be made for broadening the standard class with respect to impairments where the extra mortality can be expressed approximately as a level percentage of standard mortality.

AGE GROUP AT ISSUE	AVERAGE ANNUAL EXTRA DEATHS PER \$1,000 FOR 20 YEARS AT INDICATED PERCENT EX- TRA MORTALITY (NOT DISCOUNTED FOR INTEREST)	
	25%	50%
25-29	\$0.44	\$0.87
35-39	1.14	2.25
45-49	2.39	4.63
55-59	3.75	7.06

MR. WALTER A. MERRIAM: The low levels of mortality at younger ages make it nearly essential to broaden the standard class, because the increase in mortality that results from raising the upper boundary of the standard class is small and the expenses saved more than offset the mortality increase. This can be done either by using extra deaths per 1,000 or by some approximation thereto.

For example, a recent analysis, applicable to ages under 40, was made to determine the percentage increase in the number of cases in the standard classification which would result from setting the upper boundary at a higher numerical rating than +25. It showed that, if "standard" was defined as cases with ratings in the range of +25, there would be an increase of only 3% if the range was set at +35 and only 4.5% if the range was set at +50.

Thus, relatively few cases appraised at more than +25 would be added to the standard class even if the limit were set as high as +50 for ages up to 40. The increase in mortality rate for the standard classification would probably show an increase of comparably small magnitude. The cases added to the standard class would be clustered toward the lower part of the range added and this, by itself, would produce a percentage increase in mortality lower than the percentage of cases added to standard. However, it must be realized that a company would, at the same time, be getting fewer medical examinations in order to reduce expenses. This factor would work to increase mortality.

We feel it is entirely practical to broaden the standard class. In fact, we did this a couple of years ago by raising the boundary of our standard class from +25 to +40 for ages through 15-29, and +30 for ages 30-39.

The boundary was kept at +25 for ages 40-49 and was lowered to +20 at ages 50 and over.

The time elapsed since the above change is too short to permit a determination of the resulting mortality levels. However, nothing has occurred to make us think the change was not entirely satisfactory and we know it permits us to save on underwriting expenses, to place more cases in the standard class, and to handle cases more quickly.

Policy size is important in relation to expense rates per \$1,000. For large cases, medical examinations, more searching inspection reports, etc., are necessary, even at the younger ages, because of possible antiselection. These can be used to advantage and their expense justified by providing a suitable, more favorable premium classification for the larger cases. Thus, we require medical examinations for cases \$25,000 and over and we make available for those who buy policies this large and who can qualify a preferred classification with an underwriting boundary set at +10.

MR. NORMAN BRODIE: I should like to present a brief summary of the Equitable's latest compiled mortality results on pension trust business underwritten on a guaranteed issue basis.

Guaranteed issue underwriting was introduced in the Equitable for pension trust cases in 1957, and the results to be presented at this time pertain to the period to 1960 policy anniversaries. Before presenting the results, I might mention that guaranteed issue underwriting is not available in the Equitable on an optional basis; that is, every case that qualifies for guaranteed issue underwriting on the basis of our rules must be submitted on that basis.

The mortality experienced on the guaranteed issue pension trust cases issued in 1957 and later and observed to 1960 anniversaries has been compared with the mortality experienced in the Equitable during the 1953-1958 period on standard insurance which had been in force sixteen or more years. In other words, the experience during the first three policy years on the guaranteed issue cases was compared with a set of rates representing ultimate mortality. Even on this basis, we observed a mortality ratio of 103% by number of policies and 127% by amount of insurance. There were 70 claims reflected in this study.

For most subdivisions of the experience by issue year or issue age, we found higher mortality ratios by amount than by policies which, of course, is indicative of antiselection.

In the latter part of 1959 guaranteed issue underwriting was made available in the Equitable for certain defined groups of individuals where a pension trust arrangement was not involved. No mortality experience data are yet available on this group of issues.

MR. ERNEST J. MOORHEAD: Mortality under automatic issue in the New England Life has been compared with the corresponding select mortality of our underwritten business using the approximate method described in my recent Society paper, *TSA XIII*, page 298. This analysis covers approximately the first three policy years, is by number of policies for male lives only and involves 445 deaths. Results by issue age were as follows: ages under 40, 131%; 40-49, 190%; 50 and over, 234%; all ages, 198%.

Although these ratios look extremely high, actually they correspond reasonably closely to the ratios of ultimate to select mortality for these age groups.

The question naturally arises whether the expense and dividend savings to the company on automatic issue business are large enough to absorb the degree of extra mortality indicated by these statistics. Our tests indicate that this question can be answered "Yes" for issue ages below 50, but must be answered "No" for ages 50 and over. The special negative factor in our dividend scale for automatic issue business has therefore been steadily increased at the upper issue ages on each occasion when our dividend scale has been changed.

MR. BARTON S. PAULEY: In our current inflationary age it is often difficult to know what constitutes overinsurance, particularly at younger ages where needs are great and premiums for reducing term are low. The amount at risk in many cases is astronomical as a lump sum but not so when considered in terms of the family income and what it would provide. In addition, promotional business venture and business insurance tend to produce exorbitant amounts of coverage.

At ages over 40 for initial amounts at risk of \$20,000 and over, Prudential mortality statistics show evidence of some antiselection on decreasing term types of policies and riders as compared to level insurance plans. This is not evident on smaller amounts or at younger ages. Perhaps underwriters should be more conservative at the older ages on applications where decreasing term insurance does not seem too well suited to the applicant's needs or the timing of the purchase contrasts unfavorably with previous purchases.

MR. ANDREW C. WEBSTER: The broadening of the standard class at the younger ages may, I think, already be in effect because the bulk of our business at younger ages is taken nonmedically, and I am quite sure that the answers on the applications are not as accurate as those given on a medical examination.

As to the guaranteed issue discussed by Mr. Moorhead, we have all

assumed that the rules of the Treasury for pension trusts would exercise some selection, but the experience suggests that we might find a relation between the tax advantages for the buyer and the mortality advantages for the buyer.

As for smoking habits I do not believe it feasible to take them into account for underwriting since the practice is so widespread.

Mr. Pauley has discussed the question of overinsurance at the younger ages. I suggest that while the youth of the insured may be in our favor, only experience can tell us when there is antiselection in these younger age cases for large amounts.

MR. ALTON P. MORTON: It seems almost impossible to reject the total statistical evidence on the association between smoking and an increased death rate. It's a separate and quite different question whether it is feasible to take smoking habits into account in underwriting life insurance risks.

The most widely publicized of these data was the first study prepared by Hammond and Horn under the auspices of the American Cancer Society. It studied the smoking habits of some 188,000 men in the age range of 50-69. The study followed those lives between the years 1952 and 1955 for a total period of 44 months, during which almost 12,000 deaths occurred.

There have been several additional substantial studies by different authors, each of which received considerable publicity. A summary of these data is included with the results of the most recent published study by Dr. Hammond presented at the International Statistical Institute in the fall of 1961. A still more recent review of all available data was the basis for a statement earlier this month by the Royal College of Physicians in London condemning cigarette smoking because of its associated health hazards. The Royal College of Physicians placed these hazards on a cause and effect basis. So much for the data.

The practical problems of applying this evidence to the underwriting of life insurance risks are formidable. Some 85% of our population smoke. The practical underwriter would have to obtain verified information as to the degree and nature of every applicant's smoking in order to make proper evaluation of this factor for underwriting use. This is a more than formidable task. It's a virtually impossible one.

A very good analogy that occurs to me as to the problems and difficulties involved is the factor of family history. The difference between a very good and a very poor family history as an indicator of mortality covers a mortality range between about 80% and 120%, where the mortality for

all types of family history is represented by 100%. (See Sutton's paper *TSA VII*, p. 49, Table 12.) The difference between very heavy smokers and nonsmokers expressed in the same way is in the range of 75% to 120%. This is readily derivable from Hammond and Horn's statistics.

We have been able to use family history only sparingly in practical underwriting for a very important reason: family history facts tend to become distorted and independent verification is not easy. The problem of smoking would be similarly difficult to manage as an underwriting factor for the same reasons.

Family history is given some weight in underwriting by most companies as an added debit or credit in association with certain borderline or ratable impairments. Perhaps a similar course of practical but somewhat limited underwriting use would be to give very heavy smoking or non-smoking some weight as an addition or offset to debits for other impairments.

MR. EDWARD A. LEW: During the past eight years, five independent large-scale follow-up studies have produced remarkably consistent findings as to the extra mortality associated with excessive cigarette smoking. These studies are:

1. Hammond, E. C. and Horn, D., "Smoking and Death Rates—Report on Forty-four Months of Follow-up of 187,783 Men" (*AMA Journal* 166:1159, 1958, and 166:1294, 1958) covering men aged 50–69 from nine states.
2. Dorn, H. F., "The Mortality of Smokers and Nonsmokers" (*Social Statistics Section, 1958 Proceedings of the American Statistical Association*) covering 199,000 U.S. veterans aged 30 and over, followed for 54 months.
3. Dunn, J. E., Linden, G., and Breslow, L., "Lung Cancer Mortality Experience of Men in Certain Occupations in California" (*American Journal of Public Health* 50:1475, October 1960) covering 67,000 men aged 35–64 followed for 63.6 months.
4. Best, E. W. R., Josie, G. H., and Walker, C. B., "A Canadian Study of Mortality in Relation to Smoking Habits" (*Canadian Journal of Public Health* 52:99, March 1961) covering 28,000 Canadian pensioners aged 55–79, followed for 42 months.
5. Hammond, E. C., "Prospective Studies on Smoking in Relation to Death Rates" (*Bulletin de L'Institut International de Statistique*, 33^e Session, Paris, 1961) covering 382,000 men aged 45–79 from 25 states followed for 10.5 months.

All five studies show only slightly increased mortality among those smoking pipes only, cigars only, or pipes and cigars only, but distinctly higher mortality among cigarette smokers. Allowing for the fact that the study of Canadian pensioners relates to ages 55–79 years, studies 1, 2, 4,

and 5 indicate that among men at ages under 65 the mortality among those who smoke 40 or more cigarettes a day is about double that among nonsmokers. At attained ages 65 and over, the percentage excess mortality among heavy cigarette smokers compared with nonsmokers tends to decrease somewhat. The mortality among men who smoke 21-39 cigarettes a day appears to be at least 175% of that of nonsmokers.

E. C. Hammond's latest study suggests that the level of mortality among cigarette smokers may be related more to the degree of inhalation than to the number of cigarettes smoked per day.

The major studies bring out that approximately half the excess mortality among heavy cigarette smokers is accounted for by their high death rate from coronary artery disease. The death rate from this cause among men smoking 21 or more cigarettes a day is about double that among nonsmokers. A number of epidemiological investigations of coronary heart disease (notably the Framingham Study) corroborate this finding. Lung cancer is responsible for only about an eighth of the excess mortality among heavy cigarette smokers, even though the death rate from this cause among men smoking 21 or more cigarettes a day is from 15 to 25 times as high as that of nonsmokers. Elevated mortality from cancer of other sites is responsible for approximately 10% of the excess mortality of heavy cigarette smokers, and high death rates from various respiratory diseases (notably bronchitis and emphysema) account for about 5% of the excess mortality of heavy cigarette smokers. Heavy cigarette smokers are also subject to distinctly higher death rates from gastric and duodenal ulcers, Buerger's disease, and cirrhosis of the liver.

It should be kept in mind that the differential in mortality between heavy smokers and nonsmokers cannot all be attributed to smoking, since to some degree it also represents the effects of various cofactors, such as air pollution.

It would be quite impractical to take smoking habits into account in the routine underwriting of life insurance risks.

Kansas City Regional Meeting

MR. ROBERT N. HOUSER: At Bankers Life the underwriters feel that, within a given substandard class rating, it is not practical to work with a percentage of extra mortality which varies by issue age. It is difficult for the underwriter to keep a variable scale in mind, especially in a company such as ours which does not use a straight numerical rating system.

At any rate, there are various forces at work which have the practical effect of broadening the standard category at the younger issue ages. For example, we know it is harder to deliver a rated policy to a younger in-

sured than to an older one. This, in combination with the fact that a borderline rating carries a very small extra premium at the younger ages, makes for a tendency on the part of underwriters to throw borderline risks into the standard category at the younger ages.

Another way in which we have broadened the standard category is through the liberalization of aviation and occupational extra ratings. To the extent that this type of rating has tended to be imposed primarily upon younger people, the standard category has thus been enlarged at these ages.

The great preponderance of nonmedical insurance is written at the younger ages. To the extent that nonmedical underwriting has been liberalized over a period of years, this too has had the effect of broadening the standard category at the younger ages. If you have a nonmedical application on a young person and there is some indication that perhaps a medical should be secured, you must weigh carefully the trouble and expense of securing such an examination against the small amount of extra mortality which may be involved. Oftentimes you decide that it will cost less to simply issue the policy standard.

We have described several situations in which slightly substandard risks will get into the standard category. However, we have been talking here about a relatively narrow band of extra mortality. I don't think we have yet reached the day when any appreciable percentage of extra mortality can be written in the standard class, even at the younger ages.

MR. KARL M. DAVIES: I have just a few comments on section A by way of refutation of Frank Whitbread's conclusions* and agreeing with Mr. Houser. At Equitable of New York we have given some thought to raising the percentage range at the younger ages for standard insurance and concluded that we didn't want to make the change. One reason is that it would simply be too complicated for the underwriters to administer. Another reason is that if an impairment has, say, a twenty-five to fifty point debit range, the underwriter can give recognition to the fact that a younger person is involved by taking the twenty-five point alternative, rather than the fifty. In this way, we are tending to shade the younger people down into the standard category.

Considering next section B, last September the Equitable introduced its Planned Security Policy which was designed to meet the needs of an insured who wants a level premium contract under which the emphasis shifts from protection in the early years to savings in the later years. The policy, which consists of whole life insurance (paid-up at age 65) plus decreasing term insurance, provides the following benefits:

* See page D53.

1. A single sum death benefit equal to the face amount, payable at the insured's death.
2. A family income benefit of \$25 per month per \$1,000 of face amount payable if death occurs before the term expiry date (which is the 20th policy anniversary for issue ages 35 and under, and the policy anniversary nearest the insured's 55th birthday for issue ages 36-45). The monthly payments are made from death to the term expiry date, with a minimum of 3 years' payments.

For each \$1,000 of face amount, this plan of insurance provides an initial amount of term insurance in the order of \$4,000. This large amount of term insurance has produced some interesting underwriting problems, particularly at the younger ages. We have found that the plan is quite salable and that it apparently is sold in terms of the income provided. Typically, the sale may be for \$10,000 face amount and \$250 monthly income. These amounts sound modest until one realizes that the combination produces an initial death benefit of over \$50,000.

The plan had not been on the market very long before our underwriters were faced with applications of this size (and larger) from young men of very limited means.

At the same time \$50,000 of life insurance did not seem to be a serious violation of the old "ten times" rule, particularly if the individual showed some reasonable financial promise. We also started considering these applications in much the same way that disability income applications are underwritten, relating the amount of the insured monthly income to the applicant's current salary, using a 50% or 60% factor.

After wrestling with these considerations, we finally concluded that these applications could be accepted and so far have had no serious problems. In the past it had also been our practice to require a special financial statement from applicants seeking \$50,000 or more of insurance and to obtain a special life inspection report. It soon became clear that financial statements and such inspections were meaningless for this type of applicant and we have changed our rules so that these safeguards are not required until the Planned Security initial amount of insurance is \$75,000 or larger.

Although we have been generally pleased with the quality of business we've received, the plan is too new for significant results to be available. One important unanswered question is that of persistency, with such "big policies" issued in modest circumstances. I would be much interested in the lapse experience of any other company with policies of this type.

MR. E. FORREST ESTES: I could make a comment on our lapse experience at the Bankers of Nebraska on this family income type of policy with a large term element. How good the experience is depends on how the

policy is sold. For example, when sold on a commuted value basis for mortgage insurance, the results were not good.

With the compensation agreement we had at the time this policy was first marketed, the results were not good either, because the agents were in a position where they could give the coverage away.

But when the insurance was sold as an income plan, as it was intended to be, then the persistency was very good.

MR. DALE R. GUSTAFSON: A young man at a low salary level is a poor persistency risk; if unmarried, he is an even poorer risk. But even under these circumstances, I feel that the family income kind of plan will probably show a better persistency than the type that is often sold to this class of risk, namely the "gimmick" savings plan. When children come into the family, the young father is apt to drop the latter type of policy, and is probably more likely to retain a family income policy.

MR. DAVIES: I might say we were a little bit surprised after we came out with the Planned Security policy. We thought the plan had a good insurance element to start with, and a savings element later. About the first question that came from the field was how soon can we convert the term insurance. Originally we planned on no conversions but we have had to relax a bit.

MR. EDWARD A. DOUGHERTY: I can add something on experience with a family income rider with relatively high amount. Twelve years ago at Union Central we came out with a whole set of family income riders for various periods and various amounts of monthly income. The persistency has not been abnormal, as far as I know. I agree with Mr. Estes that the persistency depends to a great extent on how the insurance is initially sold.

MR. DAVIES reviewed a discussion presented by Mr. Norman Brodie at the Philadelphia regional meeting.

MR. GUSTAFSON: Our company, the United Benefit, markets policies in the association group area where we deal with an individual policy similar in its characteristics and rating methods to individual ordinary insurance, but sold on a quasi-group basis to variously oriented groups. Here we have a "no-underwriting" limit; that is, if a sufficiently high percentage of those eligible enrolls for the insurance, underwriting is waived. While we have written close to 100 of these groups, there is not yet a single one that has reached the prescribed limit—perhaps this is a way to control the experience!

MR. ROBERT C. TOOKEY: In advising management, I have been recommending to our young company clients that they offer a special preferred risk nonsmokers' policy, using assumed mortality of perhaps 85% of expected. The new company must have merchandise that is distinctly different and the nonsmokers' market is of sufficient size to justify a special policy. Most of us will concede that the average nonsmoker will show a better mortality than the average heavy smoker.

To help the client sell the nonsmoker policy we quote Dr. Alton P. Ochsner, President of the International Society of Surgery and a leading authority on lung surgery, who recently stated that cigarette smoking is "a form of suicide" because there is "no longer any question or doubt that cigarettes cause cancer of the lung." He urged life insurance companies to give preferential premium rates to nonsmokers because "the death rate from lung cancer among heavy cigarette smokers is 800% higher than among nonsmokers." "Cigarette smoking is just as much a form of self destruction as shooting a bullet through your head. The only difference is that a bullet through the head is quick, inexpensive, and painless."

Citing the 20 to 1 odds against successful lung cancer cure, Dr. Ochsner added, "I have yet to talk to a physician who doesn't say that a causative relationship exists between cigarette smoking and lung cancer except for those in the employ of the tobacco companies and those who themselves are addicted to smoking."

MR. PETER F. CHAPMAN: How would you go about phrasing an application to distinguish between a smoker and a nonsmoker? Of course, the neighbors might be willing to furnish the information, as they often are in the case of drinkers.

MR. GUSTAFSON: This question was also raised at the Philadelphia meeting; it appears that specific underwriting standards in this field would be most difficult to work out.