



# The Actuary

The Newsletter of the Society of Actuaries

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## THE E. & E. CORNER

*Ed. Note: Here are the first returns since the Education & Examination Committee announced its Question and Answer feature in our February issue. All interested—please keep your questions coming! Send them to James J. Murphy at his Year Book address.*

*Ques.: Is there a formal process to keep texts and study notes current?*

*Ans.: Yes, and it's constantly evolving. Its most stable element operates in exam question setting and grading. Actuaries from a multitude of experiences use our text material in drafting and reviewing questions; when they find it behind the times, they notify the Education Committee whose responsibility it is to remedy the defect.*

That Committee also has the benefit of suggestions from those teaching actuarial courses, students' suggestions, and its own periodic review of the syllabus.

*Ques.: Is a new text about to replace Jordan? How will it differ? When will we have it?*

*Ans.: As announced in *The Actuary* (October 1978), a new text on actuarial mathematics is being written. It will be in two volumes, building upon the material in Jordan's *Life Contingencies*.*

It will apply contingency theory to individual and group life and health insurance, annuities, pension funding, and computer algorithms used in calculate actuarial values. There will also be elementary applications to casualty insurance and to risk theory. The text will emphasize stochastic approaches (as contrasted to Jordan's deterministic approach); it will be closely integrated with the recent syllabus changes on Parts 1 through 3.

The first five chapters of Vol. 1, on risk theory, will come out this year and will replace the present Risk Theory Study Note for the Spring 1982 Part

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## "WHOM SHOULD I HAVE FOR MY ACTUARY?"

Messrs. George Calat, Kenneth T. Clark, Stephen C. Frechtling, Frank L. Griffin, Thomas P. Tierney and Dale H. Yamamoto answered our January Query with ideas for the imaginary advisory pamphlet. In this summary of their letters the symbol "xxx" means "he or she."

Our contributors suggest: (i) that as assurance of competence, xxx be an FSA; (ii) that xxx be personable and tactful—one thinks that in view of our own protestations xxx had better be huggable; (iii) that xxx have management ability, and be accessible easily and, when necessary, quickly; and (iv) that xxx have an established reputation with clients and represent a reputable firm—one recommended the actuary be in a firm of actuaries large enough to encompass experts in related fields, and guarantee a continuous infusion of new ideas and techniques by hiring a steady string of progressive young actuaries.

Two thought xxx should radiate confidence, essential because the client may need to be represented in court or before government officials. Effectiveness as a speaker and as a judge of character was also mentioned in a broader context.

The actuary's affiliation—partnership with a non-actuary or employee status in a public corporation or insurance company—was queried. About the first of these our contributor is neutral, observing that attorneys and physicians prohibit this pattern while accountants permit it to a limited extent. He believes that an actuary should never engage in public practice while in the employ of a corporation unless its stock is owned entirely by its own active employees; and that an insurance company actuary shouldn't assume the role of consultant to its policyholders.) On admittedly rare occasions the actuary might be in the impossible position of representing both parties in a dispute.)

E.J.M.

## MORE PROPOSALS FOR CHANGING SOCIAL SECURITY

by Robert J. Myers

The 1977 Amendments to the Social Security Act provided for a one-time National Commission on Social Security with broad mandate to study the OASDI and Medicare programs. It was a nine-member body which included representatives of the private insurance business, beneficiaries and potential beneficiaries, and individuals having special knowledge of these programs; five were named by President Carter and two each by the Senate and House. The Commission could not start work until a majority of its members had been named, which did not occur until January 1979; its report was completed in January 1981.

The following are its major recommendations:

### As to OASDI Coverage

- That all new federal, state and local employees after a specified date be covered compulsorily.
- That all present state and local government employees not under a retirement system be covered compulsorily.
- That members of Congress, the President, the Vice President, cabinet members, and the Commissioner of Social Security be covered compulsorily, with full offset of OASDI benefits and taxes against the benefits and contributions under their existing retirement system.
- That all employees of non-profit organizations, except those operated by sects conscientiously opposed to public insurance, be compulsorily covered.
- That the option for state and local governments and non-profit organizations to withdraw from OASDI be eliminated after a one-year grace period.
- That earnings required for coverage be increased to \$600 per year for the self-employed, and to \$150 per quarter for domestic workers and casual labor.

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## Letters

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The trouble is that the "B-K I" might bite them back some day. It's true that when the sample families turn to dog food the index won't be hit by the price rise in hamburgers; but when the sample families start spending large amounts on home computers that index may be pushed upward while home computers' costs go down.

The CPI is a nice clean index measuring only the cost of things; at least it was in 1942 when I was borrowed by the Bureau of Labor Statistics to help adjust it to wartime conditions. The B-K I seems to be a spending index; in our great economy which operates so much better than Socialism, Communism, or Free Enterprise, our people don't save much, hence a spending index must correlate almost 100% with an index of after-tax personal income. The latter has quite consistently run ahead of the CPI in the past.

Charles M. Larson

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## Views Solicited

Sir:

What is the actuary's professional responsibility in connection with deceptive sales practices? Should the actuary take positive action to eradicate such practices, or should he merely refrain from encouraging them? Should the actuary take positive action to warn the public about such practices, or should he merely refrain from endorsing them? What is the proper vehicle for getting this subject on the table for frank public discussion by actuaries?

I hope that some Society members will put their thoughts on these questions into the form of letters to *The Actuary*. Alternatively, I would welcome private letters on the subject.

Joseph M. Belth

Ed Note: This is from the Prof. Belth (Box 245, Ellettsville, IN 47429).

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## Hazards of Cash Value Insurance

Sir:

I was particularly struck with two statements in the Angle/Bladen theme (January issue), with which I heartily agree:

(1) We are becoming progressively less conservative just when the risk of serious economic trouble is rapidly rising, and

(2) We no longer have any reasonable basis for making any assumptions about the range within which interest rates will fluctuate.

But we must become less conservative. This we can afford provided we incorporate lower levels of guarantee into our policies. If we continue, either by legislation or current practice, to offer high guarantees, this forces us to be more conservative at the expense of the policyholder who is looking for higher, not lower, returns, and the whole process will be self-defeating.

The actions that I believe to be necessary are these:

- Reduce guarantees in new policies to a minimum.
- Stop issuing products that entail too high a risk.
- Urge legislators to permit lower guarantees.
- Look for ways to reduce guarantees and increase policyholder returns on existing policies.
- Invest in shorter-term securities, even at the risk of providing lower long-term returns to policyholders.
- Admit to ourselves that whole life insurance with guaranteed cash values has lost its appeal, and begin offering various investment and term products with low guarantees and high flexibility which the public want.

Roger A. Haslegrave

Sir:

The quickest and surest way to restore stability and to relieve the manifold pressures so well described by Messrs. Angle and Bladen is to stop in its tracks the highly inflationary increases in the general wage level that have become the means whereby purchasing power is transferred from savings to earnings and consumption.

So imbedded is the wage-price spiral—over 40% of automatic adjustments are now made quarterly—and so pervasive is the government's vast de facto income-price policy that supports and fuels it, that the possibility of halting this spiral without imposing controls has diminished to the vanishing point. In the absence of any equitable and disciplined income policy, one can hardly blame unions for insisting on frequent automatic cost-of-living adjustments.

It's sometimes alleged that the wage-price spiral is a symptom, not a cause, and therefore shouldn't be attacked directly. This is simply not true. Once begun, the spiral is its own cause as it feeds upon itself.

If an intelligent mandatory income-price policy, beginning with an outright freeze, were enacted, the problems and inequities, including those faced by the life insurance industry, would be greatly and quickly ameliorated.

Elmer R. Benedict

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## Funding Pensions Amid Inflation

Sir:

Lawrence N. Bader's recommendation (February issue) is indeed timely.

The Ontario Royal Commission on Pensions is concerned about the same problem (Report, Vol. II, 143). They rejected shortening the funding period and adopting a strong funding method but recommended further study (their report had taken only 4 years!) "with a view to bringing frequent improvements, especially of flat benefit plans, into line with the funding requirements for final-average plans."

The Commission also recommended that the possibility of benefit reductions due to plant closure before increases are fully funded be brought clearly to the employees' attention. If this were done, pressure for faster funding might be brought to bear through collective bargaining.

John M. Christie

\* \* \* \*

Sir:

One solution to the problem of funding flat-benefit pension plans is to do a second valuation to determine the funding policy contribution and the company's charge to expense, subject to legal maximums and minimums. The rate of increase in benefit level might, for consistency's sake, be taken to be the same as in the salary scale of the accompanying salaried plan, if any, and the usual funding techniques for a salary-related plan used.

Under the Frozen Initial Method, for example, the value of future normal costs would be divided by the ratio of the value of future salaries to current salaries, imputing an identical arbitrary

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# RATES AND PROBABILITIES ARE NOT EQUIVALENT TERMS

by Regina C. Elandt-Johnson

*Ed. Note. Dr. Elandt-Johnson, of the Department of Biostatistics, School of Public Health, University of North Carolina, was a panelist at a Concurrent Session arranged by the American Statistical Association at our 1980 Annual Meeting in Montreal. Our invitation to her for this article resulted from a brief comment on this basic terminology question made at that session.*

When I first became involved in analysis of mortality data, a small (or, perhaps, big?) problem which puzzled me was the use of the terms "rate" and "probability" by epidemiologists, demographers—and actuaries.

After reading several articles, and thinking a bit, I saw that there was some confusion in the use of these terms and thought I could easily demonstrate the differences and convince people to use each according to its appropriate meaning. So, I wrote an article published in the *Amer. J. Epidemiology* 102 (1975), 3 [1], explaining the differences between these two concepts, as I saw (and see) them.

Although there were some positive responses, most people involved in epidemiological research (epidemiologists as well as statisticians) were not "converted." One of my colleagues, involved in teaching vital statistics, has pointed out that I might have been right to distinguish these terms, but people still use "rate" and "probability" in vital statistics as synonymous and it is not convenient to explain to the students why some old-established terms are now incorrect. I felt that this attitude was opportunism—hiding the head in the sand and letting things go on as they "always have been done," because it is too much trouble to put them right.

Actuaries, too, are still using these terms incorrectly, though from time to time they do wonder about their own definitions. Hence I welcome the opportunity to raise this question once more. I will open the discussion by presenting my point of view—as a mathematician and statistician—and inviting actuaries to respond.

## Rates

If  $y = y(x)$  is any mathematical function of  $x$ , then

$$\lim_{\Delta x \rightarrow 0} \frac{y(x + \Delta x) - y(x)}{\Delta x} = \lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} = \frac{dy}{dx} = y'(x) \quad (1)$$

is (conceptually) an instantaneous measure of change in  $y$  per unit change in  $x$  at the point  $x$ . It is called the *instantaneous absolute rate*. The quantity  $\Delta y/\Delta x$  may be considered as an *average rate* over the short period  $\Delta x$ .

Thus, if the basic life table function  $l_x$  is represented by a continuous function of age  $x$  [ $l_x = l(x)$ ], then the curve of death,  $-dl_x/dx$ , is formally the absolute rate function associated with the survival function  $l_x$ .

A more useful concept in describing chemical and biological processes, among others, is not the absolute, but the *relative* change per mass  $\times$  time unit. If  $y(x)$  represents a mathematical

law according to which a certain mass decreases with time  $x$ , then the relative instantaneous rate per mass  $\times$  time unit, at the time point  $x$ , is

$$\lim_{\Delta x \rightarrow 0} \left[ -\frac{1}{y(x)} \frac{\Delta y}{\Delta x} \right] = -\frac{1}{y(x)} \frac{dy}{dx} = -\frac{d \log y(x)}{dx} \quad (2)$$

In this sense, the force of mortality

$$\mu_x = -\frac{1}{l_x} \frac{dl_x}{dx} = -\frac{d \log l_x}{dx} \quad (3)$$

is a (relative) instantaneous death rate.

It is more difficult to obtain an average relative rate over the interval  $(x, x + \Delta x)$ , because we have to integrate the right-hand side of (2). In practice, however, we use the approximation

$$\int_x^{x+\Delta x} \frac{1}{y(t)} \frac{dy}{dt} dt \approx \frac{1}{y(x')} \frac{\Delta y}{\Delta x}, \quad (4)$$

where  $x < x' < x + \Delta x$ .

The corresponding average rate for a life table is the central rate,  $m_x$ , obtained from the formula

$$m_x = \frac{l_{x+1} - l_x}{L_x} = \frac{d_x}{L_x} \quad (5)$$

[For more details, see Elandt-Johnson and Johnson (1980) [2].]

## Probability

The concept of probability is quite distinct from that of rate. It is concerned with stochastic phenomena and represents the chance of a certain event occurring. In particular, the event of interest may be death.

In terms of life table functions, the (cumulative) survival distribution function can be represented by  $l_x/l_0$ , and the familiar formula for the *conditional probability of death* between age  $x$  and age  $x + 1$  given alive at age  $x$  is

$$q_x = \frac{l_{x+1} - l_x}{l_x} = \frac{d_x}{l_x}, \quad (6)$$

or, alternatively,

$$q_x = 1 - \exp \left( - \int_0^1 \mu_{x+t} dt \right). \quad (7)$$

Although formula (7) expresses a probability in terms of a rate, it does not mean that probability and rate are the same concepts.

For some unexplained (for me, anyway) reasons, in many actuarial books,  $q_x$  is called the "mortality rate" (as distinguished from the central death rate,  $m_x$ ). Moreover, the conditional probability of surviving one year given alive at age  $x$ ,  $p_x = 1 - q_x$  is called the "survival" rate (!). How can one possibly speak about "survival rate"?

The confusion between rate and probability concepts arises because of time being involved. Clearly, for calculating prob-

## Rates and Probabilities Are Not Equivalent Terms

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abilities for living processes, it is necessary to introduce time, or equivalently age,  $x$ . But in this context, age is a stochastic variable with a certain distribution, so that the probability of dying over a period  $x$  to  $x + 1$  involves that part of the probability distribution function over this interval. If  $x$  were to denote height, then the probability

$$\Pr \{ \text{Height} > x + a | \text{Height} > x \}$$

would certainly not be called a rate!

### Two Examples

To stimulate discussion, I quote from two actuarial texts in which some concepts of rates and probabilities are, in my opinion, a bit confusing.

(a) I first select the excellent book by Jordan (1967) [3] which I found of greatest value as a learner. Initially (in Chapter 1) he defines  $q_x$  as probability. However, in Chapter 14 on page 278, he says: "In the context of multiple-decrement table,  $q_x^{(k)}$  is solely a rate of decrement and must be distinguished from the probability  $q_x^{(k)}$ . . . . In this book, the expression *rate of decrement* will always refer to the function  $q_x^{(k)}$  and will not be used as an abbreviation for *central rate of decrement*. The function  $q_x^{(k)}$  has often been called the *absolute rate* in other actuarial literature."

But  $q_x^{(k)}$  is defined on page 277 by formula (14.30) and this has the same form as (1.13) on page 14, where it is defined as a probability. [In this article, formula (7).]

(b) In an interesting paper by A. H. Pollard (1980) [4], we read in §7.2 on page 243:

"The survival rate which includes deaths (!) (my mark of exclamation) from all causes is usually termed the observed

survival rate. The risk of dying from causes of death other than the one under consideration varies with age. Comparisons of the survival experience of groups of patients that differ with respect to age and sex is made easier if the effect of mortality from other causes is eliminated. This is done by dividing the observed survival rate by the survival rate from deaths due to other causes. (Usually, for simplicity, mortality from all causes is used: this makes no significant difference.) The result is called the relative survival rate: it is the survival rate which would result if the cause of death under consideration were to be the only cause operating."

Although, I believe I am aware of reasons underlying the confusion in terminology, I do not think that I am able to understand this text entirely.

With only a small effort, terminology could easily be established describing concepts by appropriate names. I am looking forward to hearing some comments on this rather important matter.

### References

1. Elandt-Johnson, R. C. (1975). Definition of Rates: Some Remarks on Their Use and Misuse. *Amer. J. Epidemiology* 102, 267-271.
2. Elandt-Johnson, R. C., and Johnson, N. L. (1980). *Survival Models and Data Analysis*. J. Wiley and Sons, New York, Chapter 2.
3. Jordan, C. W. (1967). *Life Contingencies*. Society of Actuaries, Chicago, Chapters 1 and 14.
4. Pollard, A. H. (1980). The Interaction between Morbidity and Mortality. *JIA* 101, 233-302.

## Letters

(Continued from page 3)

salary to each participant. Using, say, \$100 a month and a 6% of final pay per year of service formula, this can easily be run on a standard valuation system for a plan providing \$6 per year of service. As long as the increase in normal cost doesn't exceed the difference between 10- and 30-year amortization of the unfunded liability, the result can be used to determine contributions.

As Mr. Bader points out, even when these numbers aren't used to determine contributions, they give useful information to the plan sponsor. They can be produced economically using the above technique.

Matthew S. Easley

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## Barnhart On Hunt

Sir:

Some response is in order to James H. Hunt's comments (January issue) about my cancer insurance article.

First, as to incomplete coverage: he calls cancer insurance, covering but one cause of loss, an absurdity. He may be surprised to learn that I agree with him. Personally, I wouldn't buy it.

But it doesn't follow that it is harmful or contrary to the public interest. Suppose my neighbor is bothered about, say, multiple sclerosis, and can buy insurance against it at a reasonable price, why should I try to deprive him of exercising that choice? Even more to the point, why should Mr. Hunt? Insurance regulatory attention grows less and less directed to protecting the public (and the industry) against harmful, unfair

and unsound practices, and more and more toward mandating what, in the regulators' opinion, is best for the public—in some cases even to the point of mandating unsound practices and prohibitive costs!

But the key issue remains the loss ratio. I view loss ratios in terms of realistic present values of past and expected benefits vis-à-vis past and expected premiums, taking both interest and persistency into account. I can't follow the logic of Mr. Hunt's remark about guaranteed renewable policies, and I don't see that introducing non-forfeiture values would help; they would drive premium levels sharply higher and encourage still more lapsing.

Mr. Hunt misunderstood me in saying, "Mr. Barnhart can't be serious when

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**Letters***(Continued from page 5)*

he suggests that regulatory bodies ought to look with favor on 30% to 40% loss ratios." I wasn't suggesting what regulatory bodies ought to do; I was stating what many of the more realistically minded ones in fact do. This includes some of the largest and most sophisticated state departments. It also includes the N.A.I.C., which in its guidelines recognizes loss ratios as low as 35% as presumptively reasonable for individual policies with average premiums below \$100, and permits further deviation if actuarially justified under "special circumstances." And these guidelines list cancer insurance among the coverages "requiring special consideration" as to reasonableness of loss ratios.

E. Paul Barnhart

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**Ethics Of Tax Avoidance**

Sir:

I am amazed that Robert J. Myers (February issue) considers the tax avoidance scheme, "FICA-II," iniquitous manipulation. What is iniquitous about legal tax avoidance?

There was a loophole which permitted lesser Social Security taxes, and as a result lower benefits. Some companies didn't take advantage of this, concluding either that it was too much trouble or that the value of their employees' lost benefits exceeded tax savings; others decided it was in their financial interest to adopt the plan, with savings either passed on to or shared with employees.

It seems inappropriate for a consulting actuary to express to his client either approval or disapproval of the plan. The actuary should make its consequences thoroughly clear—not make value judgment about loopholes in our country's tax system. The company management should make its own decision. It isn't up to the actuary to disapprove financial self-interest implemented legally.

Will we next be told that it's immoral for an employer to exclude sick pay from Social Security taxation? This similarly results in lower tax collections and lower benefits to workers.

Allan B. Keith

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**Linguistic**

Sir:

Ernest R. Vogt (Jan. issue) will forgive a confirmed old Germanophile for

differing about the German word for *actuary*. Although that nation's penchant for unbridled agglutination is well known, I should be surprised were a German actuary to refer to himself using anything more challenging to the Anglo-Saxon tongue than *Versicherungsmathematiker* (insurance mathematician). Prefixes, e.g. *Lebens-* (life), *Kranken-* (sickness), may be added to tell one's specialty, but few of us qualify for the suffix *wissenschaftler* (scientist), at least in that word's classical sense.

Incidentally, I found life contingencies as difficult to master in German at the University of Munich in 1973 as it turned out to be later in English. Nevertheless, I did learn to manipulate *den Wert einer vorschussigen Leibrente*, long before I ever knew it meant the present value of a life annuity-due!

Paul E. Buell

**This Month's Query For Actuaries**

"Suppose I owe a hundred dollars on which I pay 12 percent interest, and the rate of inflation is 10 percent. In this case the true interest cost is 2 percent; the remaining 10 percent represents in fact repayment of part of my debt. At the end of the year, I still owe the same number of dollars, 100, but the real value of my debt is now 10 percent lower, because of inflation."

These words are in a letter from two Harvard economists, printed in the *New York Times*, March 6, 1981. Those writers, Jeffrey Sachs and Olivier Blanchard, use that reasoning to assert that "the constant-dollar value of the (U.S.) public debt is hardly rising," i.e., "the Government is not really living beyond its means." "The properly measured deficit of the Federal budget for fiscal 1980 is about \$14.5 billion, or .005 of G.N.P., not the frightening \$59.5 billion cited in public debate."

*Query:* What do actuaries think of this line of reasoning? What are the implications of its acceptance by the public and the Federal budgetmakers?

Please send answers to this newsletter's masthead address, for compilation with credit to each contributor.

**A PAIR OF ATTRACTIVE SEMINARS**

by Linden N. Cole

"*The Actuary and Market Research.*" This will be a one-day event, a promising blend of theory and practice. Its faculty—an actuary experienced in marketing, and experts in statistical methods from University of Waterloo, Hartford, May 15; Washington, May 18; Kansas City, May 20; Ottawa, May 27.

"*Modern Statistics, With Actuarial Applications.*" For actuaries who have the uneasy feeling that the statistical world has moved ahead of us, or who just seek to brush up. Faculty—actuaries from Universities of Michigan and Waterloo. St. Louis, June 4-5; Hartford, June 15-16.

**Seminar Pre-Registration Rules**

Pre-registrations accompanied by \$25. guarantee a place up to two weeks before a seminar begins; check for full fee guarantees a place unconditionally. But in the latter case just as the former, we want that final registration form!

**A Postponement**

"*Risk Theory Calculations, and Other Applications of Advanced Statistics*" is postponed to September. We felt it should be held after the one listed above. □

**BOOK REVIEW**

*A Nationwide Survey of Attitudes toward Social Security.* Report prepared for The National Commission on Social Security by Peter D. Hart Research Associates, Inc., 300 pp. Available from the Commission at Washington, DC 20218, gratis.

Reviewed by Robert F. Link

More Americans than not have a working knowledge of our Social Security system. They believe benefits have increased "somewhat", while taxes have increased greatly. About two out of three know that its payroll tax receipts aren't set aside in individual accounts, but are used to pay benefits to those already retired. A low level of objection tends to be expressed to Social Security taxes in comparison with other taxes.

These are some of the findings of this report prepared for the Commission by the research firm from in-depth interviews with 1,549 persons selected so that every adult had an equal chance to be included. First appears a brief summary, followed by about 80 pages of findings, almost 200 pages of tabulated

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## Book Review

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results, and lastly some technical specifications. Statistical cuts are made between 434 retired and 1,115 non-retired persons; cuts are also taken by groupings—age, income, occupation, educational attainment, and other factors.

These findings merit study. Attitudes toward retirement are only marginally favorable among the non-retired, but somewhat more favorable among the retired. About 58% of the former would like to retire before age 65, but only 41% expect to do so. Among the retired, 33% desired to retire before 65, but 59% did so. Reasons (with some duplications) for retirement cited by the retired were: health (51%), positive feeling about retirement (14%), negative work conditions (14%), mandatory age attained (only 11%), various other (26%). A clear majority of the non-retired expect Social Security to be their major source of retirement income; 75% of the retired have found that to be so.

A majority have a good understanding of our system's major features. They understand that: benefits are based on covered pay; financing is by payroll taxes; there is no means test; and benefits are intended as a supplement to other income (but they believe it should play the larger role of meeting "the basic needs and obligations of retired people"). They know about disability and survivor benefits. But they have less understanding of benefit-indexing and non-inclusion of Federal employees.

Only one in four considers payroll taxes too high for the benefits provided. Higher future taxes are preferred to lower future benefits. Payroll tax financing is preferred to income tax or a national sales tax. But a plurality favors general revenue financing of Medicare over a payroll tax increase.

A majority (61%) of the non-retired "have little confidence that funds will be available to pay their retirement benefits." Yet, 76% oppose ending the system. And the Social Security Administration gets "high marks" for its performance.

This study appears to be generally well done. In today's inflationary environment, however, one must regard all responses about benefit and tax increases as ambiguous.

## Comparisons With Other Surveys

Four or five years ago, Prof. Gary W. Eldred reported, in *The Journal of Risk and Insurance*, Vol. XLIV, No. 2, results of his own mail survey covering somewhat the same ground. While his study, which achieved 78% response from 560 persons, was structured quite differently from the National Commission survey, some comparisons are possible. Many of the results are in essential agreement. Eldred found a lower level of understanding and less favorable attitudes toward Social Security in general and payroll taxes in particular. Answers to one of his questions seemed to reveal strong antipathy to the "social tilt" in favor of lower-paid persons. And he found, not surprisingly, overwhelming objection to the retirement test, an issue strangely not really raised in the Commission survey.

On 14 October 1980, the Wall Street Journal in its *Asides* reported a survey of how Americans thought they were making out financially. A majority considered they had their finances under control—yet, 80% of members of Congress thought otherwise. Is there a message here? Legislators searching for various devices to avoid raising payroll taxes should look carefully at the National Commission survey results. Perhaps aversion to payroll tax increases is not so extreme as to justify such maneuverings. □

## Reinsurance Text Book

We welcome a book on reinsurance principles by Eli A. Grossman, FSA. Published by Life Office Management Association for its education program, *Life Reinsurance* has sections on such subjects as deciding on retention limits, choosing reinsurers, underwriting, accounting and administrative considerations. On pp. 47-49, the author gives his predictions on reinsurance's future, including this: "Although stop-loss reinsurance will not replace all traditional reinsurance, it will become more popular and eventually will emerge as part of every treaty." Also, "The more sophisticated and ethical reinsurers will prosper and expand, while the others will disappear."

## AIDING AND ABETTING

To give us essential help in our search for worthy items, this newsletter has begun to gather round us a corps of reporters. We are happy to announce the following appointments:

Stephen R. Gold	California
Pamela S. Woodley	New England
Edwin E. Hightower	Southwestern U.S.A.

Our Editorial Board members are patrolling other parts of the continent, but would be delighted to turn over that task to any members who care to volunteer. We expect to swell the above list to at least six or seven.

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We are pleased also to have the good help of Joseph Yau as proofreader. He succeeds Geoffrey L. Kischuk who served ably in that post until he was transferred away from the New York area.

E.J.M.

## The E. & E. Corner

(Continued from page 1)

5B. The rest of Vol. 1 will follow later in 1981 and will probably be on the Fall 1982 Part 5A.

*Ques.: Why do results for multiple-choice computer-score exams take 6 to 8 weeks to arrive?*

*Ans.:* Here is a typical timetable for a multiple-choice exam:

*First week:* Getting answer sheets and booklets to Educational Testing Service (ETS).

*Second Week:* ETS runs its program and reports back to the Society.

*Third Week:* Part Chairman reviews these results.

*Fourth Week:* Part Chairman sets tentative pass mark and reports to E. & E.'s General Officers.

*Fifth Week:* General Officers decide on pass mark (which may require discussion with joint sponsors).

*Sixth Week:* Numbers belonging to successful students are given to Society office; pass list is compiled and thoroughly checked.

*Seventh Week:* Students are notified of their results.

As you can see, there are many steps, easily using up 7 to 8 weeks. We do continually seek ways to speed this program.

J.J.M.

**Changing Social Security**

(Continued from page 1)

*In the OASDI Benefit Area*

- That the retirement age for unreduced benefits be gradually increased from 65 to 68, beginning in 2001 and reaching 68 in 2012. The minimum age for reduced benefits would move up in tandem from 62 to 65. Similar changes would be made for spouse's and widowed spouse's benefits.
  - That increments for delayed retirement beyond 65 be increased from the present 3% per year to 7%. Several other possibilities were also presented, one being actuarial equivalents.
  - That the age at which the earnings test is removed (72 through 1981, 70 thereafter) remain at 72 but, beginning in 2001, gradually increase to 75.
  - That the windfall benefits that government employees acquire from outside employment be eliminated as to future employment.
  - That the special minimum benefit granted to low-earnings persons be liberalized by increasing the years of creditable coverage from 30 to 35 and allowing up to 10 child-care years to count.
  - That the Maximum Family Benefit for disability beneficiaries, which was decreased by the 1980 Act, be changed back to its former level, except for a cap of 80% of the highest-five-consecutive years average indexed earnings (generally of little effect).
  - That widow's and widower's benefits be indexed by wages, rather than prices, during any period of deferment, i.e., between widowhood and age 60.
  - That the automatic adjustments in response to CPI increases be based on wage instead of price changes when, for a two-year period, wages rise less rapidly than prices—with a catch-up provision when wages once again rise more rapidly.
  - That school-attendance benefits, available at ages 18-21, not be payable when the child's attendance is not full-time.
  - That marriage and remarriage be eliminated as termination causes for beneficiaries on the roll.
- In OASDI Financing*
- That the tax schedule be revised to provide adequate short-range financing and to bring the system into close long-range actuarial balance (see table at end of this article).
  - That the combined employer-employee tax rate for OASDI and HI be limited to 18%; when a higher rate would be needed, the additional funds to come from general revenues, payable into the OASI and DI Trust Funds.
  - That inter-fund borrowing among the OASI, DI, and HI Trust Funds be allowed; and that borrowing from the General Fund of the Treasury be allowed, but only until 1985.
  - That the maximum taxable earnings base be frozen for 1985-86 at the level it reaches in 1984.

*Budgetary and Administrative*

- That the operations of all Social Security trust funds be removed from the unified budget.
- That administration of the system (OASDI and Medicare) be moved from the Department of Health and Human Services to an independent agency.
- That an income tax credit be granted to persons who attain age 65 after 1981 to offset in part OASDI benefits withheld as a result of the earnings test. This credit would increase with age.

*In Medicare Financing and Coverage*

- That, beginning in 1983, HI be financed to the extent of half its cost from general revenues, and that the HI tax schedule be revised in consequence of this and to provide adequate long-range financing (See table).
- That a special 2½% surcharge be added to personal income taxes to help meet about half the cost of the above general revenue financing (proceeds not, however, going directly into the HI Trust Fund).
- That, beginning in 1982, HI coverage be made mandatory for all federal, state and local government employees.
- That a catastrophic cap (\$2,000 in 1982, indexed to CPI thereafter) be established, all out-of-pocket expenses for cost-sharing payments above it to be met by Medicare.

- That Medicare's waiting period for disabled beneficiaries be reduced from 24 months to 12 months on the roll.
- That the age of Medicare benefit eligibility be increased, just as for OASDI, from 65 gradually to 68.
- That hospital benefits be determined by the calendar year instead of by spell of illness; that daily cost-sharing amounts be changed to 10% of initial deductible for the 51st to 100th days and to 5% for the next 50 days, and the lifetime reserve days be eliminated; that higher maximums on outpatient psychiatric services be set; and that benefits be payable for foreign hospitalization.

The Commission also recommended that the chief actuarial officers for OASDI and Medicare provide a certification in the annual Trustees Reports of the assumptions and methods they used in preparing their actuarial cost estimates.

This author, who was the House Republicans' appointee to the Commission supported all its recommendations except those for partial financing of HI (and ultimately OASDI) from general revenues, and for increasing the Maximum Family Benefits for disability beneficiaries.

**Employer + Employee Tax Rates Presently Scheduled and Recommended (OASDI + HI); Payments from General Revenues expressed as percentages of taxable payroll.**

	Present Tax Rate	Recommended Rates			
		Payroll Tax Rate		From General Revenues*	
1981	13.3%	13.30%			
1982	13.4	13.40			
1983-84	13.4	13.40		1.30%	
1985	14.1	13.95		1.35	
1986-89	14.3	14.05		1.45	
		<u>First 5 yrs.</u>	<u>2nd 5 yrs.</u>	<u>First 5 yrs.</u>	<u>2nd 5 yrs.</u>
1990-99	15.3	13.05	13.50	1.85	2.30
2000-09	15.3	12.60	12.85	2.60	2.85
2010-19	15.3	13.35	14.90	2.85	3.00
2020-29	15.3	16.70	18.00	3.30	4.10
2030-39	15.3	18.00	18.00	5.40	5.80
2040 & after	15.3	18.00	18.00	5.90	5.90

\*Payments from general revenues would be for HI in 1983 and after, and for OASDI in 2025 and after.

**Appointment in Social Security Administration**

We report with much pleasure that Robert J. Myers has been appointed Deputy Commissioner of Social Security for Programs.

**Deaths**

- Patrick Carrigan, A.S.A. 1954
- Arthur W. Larsen, F.S.A. 1923
- Ronald G. Maitland, F.S.A. 1948
- Norris E. Sheppard, A.S.A. 1923

*Contributions to the Actuarial Education & Research Fund, 208 S. La Salle, St., Chicago, IL 60604, in memory of any deceased member are acknowledged to the donor and to the member's family.*