

**REGULATORY MONITORING OF INDIVIDUAL
HEALTH INSURANCE POLICY
EXPERIENCE**

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ABSTRACT

This paper was prepared to facilitate discussions with the New York State Insurance Department concerning price regulation for individual health insurance. It develops principles (and the associated mathematics) for the application of minimum loss ratio standards. It also develops a rational basis for regulatory monitoring of individual health experience. These principles and the basis for regulatory monitoring have not been discussed previously in the literature.

The paper identifies several issues raised by past regulation and recent developments and offers reasoned positions on the questions raised. It is hoped that the discussion resulting from consideration of these positions will provide a constructive dialogue to aid regulators as they move toward closer monitoring of individual health insurance loss ratios.

I. INTRODUCTION

This paper was prepared to facilitate discussions with the New York State Insurance Department concerning price regulation for individual health insurance. The law requires the department to ensure that benefits are reasonable in relation to the premiums charged and to promulgate minimum standards to that end for individual health insurance.

In the area of pricing, the department has sought to carry out this charge by promulgating minimum loss ratio standards. The concepts initially developed in New York have since been adopted by many other states.

Regulators, salespeople, and insurers seek a variety of aims in the price regulation process:

1. The insurance department seeks to ensure that consumers receive coverage of "substantial economic benefit" and that "an unduly large proportion of the premium" not be "expended for sales and administrative expenses, rather than to pay claims." In short, regulators seek to represent the position that a knowl-

edgeable consumer would take to encourage the availability of needed and desired health insurance coverage at a fair and equitable cost.

2. Salespeople want a pricing structure that gives them fair compensation, recognizing their time and expenses and their expertise, and that motivates them (a) to find prospects who need health insurance, (b) to take the time to demonstrate the need, and (c) to persuade the prospects to use their money to buy the needed coverage, thus forgoing more tempting uses for the money.

3. Insurers want adequate revenues to cover their costs, and sufficient profits to provide a fair return to the providers of the equity capital of the enterprise. Furthermore, since insurers are constrained by minimum loss ratio requirements (obversely, expense-ratio limits), they want assurance of prompt regulatory approval for premium rate increases as needed and contractually permitted.

II. REGULATORY BACKGROUND

New York State Regulation 62 requires the filing of rates for all health insurance policy forms for delivery, or issued for delivery, in New York State. An "anticipated loss ratio" must be calculated and submitted for each filing. The regulation defines the anticipated loss ratio as "the ratio at the time of policy filing or at time of subsequent rate revision of the present value of all expected future benefits, excluding dividends, to the present value of all expected future premiums."

Regulation 62 also contains the following section requiring insurers to maintain experience records:

(a) *Maintaining Experience.* Premium and loss data shall be recorded for each policy form and, where more than one coverage may be provided at the option of the insured under a single policy form, for each major combination of coverage on the following basis for each calendar year:

- (1) premiums written and paid;
- (2) each reserve component;
- (3) earned premiums;
- (4) paid losses; and
- (5) incurred losses.

(b) *Combining Experience.* Experience under different policies where the premium and coverage are substantially the same may be combined.

(c) *Fund Accounting.* Experience data for policies which are guaranteed renewable but permit the insurer to change the premium shall be maintained on the basis of fund accounts which will reflect premiums, investment income, losses, expenses, and provision for reserves.

Schedule H and the Accident and Health Policy Experience Exhibit also provide loss-ratio data that have been used by insurance departments seeking to examine the reasonableness of benefits in relation to premiums in the light of emerging experience. Recently the New York State Insur-

ance Department requested experience data on individual accident and health insurance policies issued in New York to persons aged 60 and over. After the department's review of the resulting submissions, twenty-one companies were directed to reduce premiums and to refund previously received premiums in order to bring loss ratios into line with minimum loss ratio standards.

III. POSITIONS ON MAJOR ISSUES

Regulation of minimum loss ratios in the past, and recent moves by the New York State Insurance Department, raise several issues that this paper will seek to address. The following are reasoned positions stemming from the author's consideration of some of these issues. It is hoped that the discussion resulting from consideration of these positions will provide a constructive dialogue to aid regulators as they move toward closer monitoring of individual health loss ratios.

1. *The traditional statutory loss ratios are flawed as a basis for tracking emerging experience.*

Rationale: Statutory loss ratios as shown in Schedule H and the Accident and Health Policy Experience Exhibit are defined as the sum of incurred claims plus the increase in policy reserves, divided by premiums earned before adjustment for the increase in policy reserves. The policy reserves used for this purpose are the statutorily defined reserves. These are intended to make adequate provision in the aggregate for emerging experience and are not necessarily appropriate as a monitoring basis for any specific policy form or coverage type.

For example, the 1964 Commissioners Disability Table is generally used to calculate statutory disability income reserves. This table is based on aggregate experience among all occupational classes. It will give distorted results for companies or coverages for which the business is concentrated in particular occupational classifications such as professionals. The absence of lapse rates in the calculation of the reserve factors further distorts statutory reserves, making them unsuitable for experience monitoring. Finally, statutory loss ratios are relatively low at the early policy durations and later rise to an ultimate level. Aside from the inappropriateness of the statutory reserve basis for loss-ratio determination, two factors account for most of this effect. The first is select morbidity, which reflects the insurer's effort to hold down the cost of insurance through equitable risk selection and classification. The second is the use of preliminary term reserve valuation methods. Insurers will be forced to incur losses unfairly if they are required to manage results to produce statutory loss ratios in

the early durations that are greater than the promulgated minimum loss ratios, since these minimums contemplate anticipated loss ratios over the full policy lifetime.

2. *Loss-control expenses should be treated in the same way as other loss expenses, such as claims and claim reserves, for purposes of loss-ratio determination.*

Rationale: Consumers seek to minimize their out-of-pocket cost for the coverage they need or desire. It is not in their interest that a few individuals, either unscrupulous or lacking in foresight, should profit at the expense of the prudent, ethical majority. Hence it is in the public interest for insurers to screen applicants for insurance and to review claims for validity. Expenses invested in these activities directly reduce claim costs and the resulting cost of insurance to consumers. Hence, they should be included in the loss ratio.

In theory, inclusion of loss-control expenses in the loss ratio might be expected to justify higher minimum standards. As a practical matter, however, their inclusion will help offset the effect of moving from conservative to realistic assumptions in the calculation of anticipated loss ratio minimums, thus allowing retention of previously promulgated standards.

The costs to be classified as loss-control expenses for this purpose should be carefully defined to include the following:

- A. Direct risk selection and classification costs:
 1. Medical underwriters (qualified physicians).
 2. Professional underwriters who are not physicians, no part of whose compensation is a function of sales.
 3. Attending physicians' statements, hospital records, inspections, and similar requirements, and the Medical Information Bureau and Disability Income Record System.
 - B. Direct claim costs:
 1. Salaried claim reviewers.
 2. Investigation and adjustment.
 3. Direct claim handling fees paid to agents but not determined as a percentage of premium.
3. *Policyholder dividends should be treated as benefits for purposes of loss-ratio determination.*

Rationale: Although dividends are not contractually fixed, and they do not require the occurrence of an insured loss contingency, they accrue fully to the benefit of consumers. It is in the best interest of consumers to maximize policyholder dividends. Therefore, it is contrary to the con-

sumers' interest to treat such dividends the same as insurer expenses or profits. The nonguaranteed nature of dividends can be addressed as part of the monitoring of emerging experience.

4. *Emerging experience year by year should be related systematically to that expected over the life of the contract.*

Rationale: The anticipated loss ratio, required as part of the filing for initial approval of rates, recognizes the benefits to be returned to policyholders over the policy lifetime implicit in a given coverage block. For consistency this principle ought to be retained in monitoring emerging experience after issue. However, none of the filed policy experience information provides a basis for doing this.

There is an incongruity in section 52.45 of Regulation 62, which includes a provision that reads: "[T]he minimum anticipated loss ratio with respect to the premium derived from premium increases on existing policies should be appropriately increased to reflect reduced acquisition and other expenses." The proper principle to apply is that the anticipated loss ratio with respect to filings for premium increases after policy issue should be such as to bring the anticipated loss ratio calculated as of the original issue date into line with the standards that would have applied at issue if it had then been possible to anticipate precisely the experience that has emerged.

5. *Experience under policies providing like coverages should be combined for monitoring purposes.*

Rationale: The monitoring mechanisms that have applied up to now have been based on experience by policy form number. The policy form relates to the contractual provision of coverage, and technical changes in policy wording (e.g., simplified language) may necessitate the filing of a new policy form that provides coverage essentially similar to that provided under a previously issued form.

Furthermore, it is possible to alter the coverage under a given policy form significantly by the use of riders. Experience monitoring should review the history of similar insurance coverages, and those coverages should be combined regardless of the particular policy form used to provide the coverage. Coverage categories should be defined as part of the initial filing with the state insurance department and should not be changed during the monitoring period.

In the interest of simplification, insurers should be encouraged to prepare integral policy forms relating to the specific coverage being provided, as opposed to using riders to modify coverage under a basic policy form. The present incongruous application of policy experience monitoring en-

courages companies to seek to combine as many coverages as possible under a single policy form, so as to have available the unfavorable experience under some coverages to offset favorable experience on other coverages. This practice, however, requires companies to modify basic policy forms by rider, creating unnecessarily complex forms for the public to deal with.

6. *There should be credibility adjustments for policies involving small coverage volumes or for experience collected over a short period of time.*

Rationale: Credibility can be measured by standard statistical techniques, and these should be used to ensure that regulation is rationally applied, consistent with sound insurance principles. The actuarially appropriate basis for experience monitoring is the tracking of actual emerging experience relative to that anticipated in the original pricing of the policy, as reflected in the anticipated loss ratio submitted with the initial policy form filing. The traditional loss ratios do not provide an adequate basis for judging the statistical credibility of such emerging experience.

7. *Requirements that companies maintain experience data in elaborate and misleading detail unnecessarily increase operating expenses and indirectly increase the cost of insurance to consumers.*

Rationale: In order to manage coverage profitability, insurers must maintain experience data on benefits offered. The amount of detail maintained by insurers for any given block of business is directly related to the volume of business conducted and the financial importance of that particular block of business. After-issue monitoring based on the data companies reasonably can be expected to maintain for management purposes is less onerous and more effective than a detailed experience-reporting structure applied on a blanket basis to all companies and all coverage blocks.

8. *Insurance departments should not regulate insurer profits.*

Rationale: The profits of public utilities are directly regulated by state authorities to ensure an appropriate return on assets to investors. The profits of utilities are regulated because they have a monopoly within their market areas. Insurance companies have never been subject to utility-type regulation because of the competitive forces operating in the marketplace for insurance protection. Competition has sufficed to regulate the profitability of insurance companies. Loss-ratio monitoring should not be used to achieve regulation of insurance company profitability by indirect means.

9. *The requirement of minimum loss ratios and after-issue monitoring should not prevent the marketing of worthwhile coverages to the public.*

Rationale: Although there is a need for promulgated standards consistently applied, insurers need to be able to apply for relief from rigidly imposed standards in cases where it is clearly in the public interest to do so. With the present loss-ratio basis it is impossible for insurers to meet both the minimum loss ratio requirement and certain public needs for which the net premiums are too low to provide an adequate base to carry the companies' fixed operating costs. This is contrary to the public interest, and regulatory relief is needed.

10. *Losses on a year-of-incurred basis are a more stable indicator of actual emerging experience than are statutory incurred losses.*

Rationale: Incurred losses include corrections for past overstatements or understatements in the calculation of claim reserves. This can distort the incurred claim results for a given year or period of years and can lead to erroneous conclusions if these loss ratios are used to monitor emerging experience and to review proposed corrective actions.

11. *Higher minimum loss ratios should not be required for those over age 60 than for those under age 60.*

Rationale: The policy lifetimes of contracts issued to older people generally are shorter than those for policies issued to younger people. This gives insurers a shorter period over which to recover fixed underwriting costs and other acquisition expenses. Hence, the margin for company operating expenses needs to be larger, not less, for this business. Furthermore, very few companies maintain experience records on an issue-age basis, relying instead on periodic experience studies to provide age-by-age data. Age differentiation introduces an irrational and onerous element into the regulatory process.

IV. A PROPOSAL FOR REGULATORY MONITORING OF EMERGING EXPERIENCE

It is clear that, if regulations require the filing of an anticipated loss ratio at the time of policy form approval, and if those anticipated loss ratios are subject to minimum standards, then some form of after-issue loss-ratio monitoring is appropriate. It is important, however, that subsequent monitoring be consistent with the initially imposed standards and that the monitoring process address rationally the issues identified in Section III.

To ensure regulatory compliance, the actuary responsible for the coverage should periodically review the continued appropriateness of the most recently submitted anticipated loss ratio. The frequency of such periodic reviews depends on the volume of business conducted by the insurer under the particular coverage involved. For very large blocks of business this review could be annual; for smaller blocks of business the review might be at quinquennial intervals. Statutory requirements may sometimes determine the frequency of this review.

The periodic review should consist of an analysis of the continued relevance of the initial assumptions underlying the existing anticipated loss ratio. If emerging experience indicates that those initial assumptions were too liberal or too conservative, appropriate modifications in the assumptions can be made by the actuary. The reasoning behind the actuary's decision to continue or revise the assumptions can be carefully documented in an actuarial submission to the insurance department. The revised assumptions then can be used to calculate a current, best-estimate anticipated loss ratio, and appropriate action can be taken on the basis of the result.

If the new anticipated loss ratio is lower than the regulatory minimums, the insurer might be required to submit proposals to bring the loss ratio into line by paying dividends or similar credits, by increasing benefits, or by reducing premiums. If the anticipated loss ratio is higher than a rate-increase threshold to be promulgated by the department (say, five percentage points higher than the minimum loss ratio), then a rate increase could be implemented automatically unless the insurance department acted within a preset period to preclude implementation of the increase. The rate increase will have to be consistent with the new anticipated loss ratio to bring it into line with the minimum loss ratio standard. This procedure would enable insurance departments to proceed on an exception basis and would reduce the degree of analysis that they have to apply to routine rate-increase adjustments reflecting normally experienced inflation.

In recalculating the anticipated loss ratios in line with the emerging experience, accumulated experience may lack sufficient volume to have credibility or may reflect explainable aberrations. Furthermore, the anticipated loss ratio calculated for this purpose will be based on the present value formulation underlying the initial submission and, hence, will differ from the traditional loss-ratio calculation that appears in Schedule H and the Accident and Health Policy Experience Exhibit. It must be recognized that anticipated loss ratios calculated on this basis are likely to be lower

than those calculated by the traditional method, owing to the discounting for interest and lapse of the higher loss experience anticipated at the longer durations.

To allow for the credibility problem, it is proposed that the initial assumptions accepted by the insurance department for the calculation of the anticipated loss ratio at the time of policy form approval be considered valid (except for econometrically observed inflation rates) until emerging data indicate with statistical validity that those assumptions were in error. Loss ratios would be tested using standard statistical techniques to give a loss-ratio range of no more than ± 3 percent at the 95 percent confidence level.

If the insurer's experience with a particular form is too limited to give this level of credibility, additional hypothetical experience will be weighted with the emerging experience, using the prefiled expected experience standards to build the loss-ratio experience to the level needed to produce the 3 percent credibility level. Since the test to be applied is a minimum test, the benefit of any doubt should go toward increasing the experience ratio. Hence, the 3 percent margin should be added to the experience ratio. The average anticipated loss ratio plus the 3 percent needed to achieve 95 percent credibility would be treated as the experience ratio for action purposes.

With this proposal there will no longer be a need to require a higher loss-ratio standard for rate increases to reflect the postacquisition situation, since the experience is viewed both retrospectively and prospectively over the entire policy lifetime. The early-duration experience simply would be brought into the calculation on a historical basis, and the revised anticipated loss ratio, calculated retrospectively to the original inception date, will be used as the rate-increase trigger standard. This will also eliminate the problem of tracking increasing loss ratios by policy duration, since the full experience over the policy lifetime will be brought into the calculation automatically.

V. TECHNICAL FORMULATION OF THE PROPOSAL

The following definitions will apply (notation generally follows that in E. L. Bartleson, *Health Insurance Provided through Individual Policies* [Society of Actuaries, 1968]).

eALR_t = Anticipated loss ratio at issue age x reflecting actual experience to duration t ;

${}^sALR_x^0$ = Anticipated loss ratio at issue age x reflecting standard assumed experience as submitted for approval of the original rate filing;

${}^sALR_t^x$ = Anticipated loss ratio at issue age x as submitted for approval of a rate-increase filing t years after the original submission;

${}^sS_y^0$ = Claim cost at attained age y reflecting standard assumed experience as submitted for approval of the original rate filing;

${}^E S_y^t$ = Claim cost at attained age y reflecting actual experience over the t -year period following the original submission;

${}^s S_y^t$ = Graduated credible claim cost at attained age y used to calculate ${}^sALR_t^x$ and reflecting the experience of ${}^E S_y^t$.

${}^E S_y^t$ will be based on records maintained to manage the product. Records that are deemed adequate for management's use in tracking coverage profitability are presumed adequate for regulatory purposes unless there is strong evidence of concealment.

${}^s S_y^t$ will be based on ${}^E S_y^t$, but graduated to smooth out statistical anomalies without changing the level, or distorting the basic representation, of the experience. It will also be adjusted to reflect statistical credibility according to the following principle:

To achieve the objective 95 percent confidence level of experience with an ${}^E ALR_t^x$ within 3 percent of actual for an infinite population, a block of at least 1,000 policy-years of experience is required, assuming a normative ALR_t^x of 60 percent and using the binomial distribution.

The use of the binomial distribution as an approximation to the distribution of sample ALR_t^x within the experience universe is a practical device to simplify credibility determination. It deviates from theoretical statistics in treating ALR_t^x as a probability function. Nevertheless, in practice ALR_t^x should be sufficiently analogous in behavior to a probability function to permit this simplification without distorting the credibility determination beyond the underlying limitations of the experience data to which it will be applied.

For blocks with fewer than 1,000 policy-years of experience the graduated ${}^E S_y^t$ will be weighted with ${}^s S_y^0$ to give a statistically credible ${}^s S_y^t$ by using the following procedure, in which n is the number of policy-years of experience from which ${}^E S_y^t$ is derived.

$${}^s S_y^t = \frac{(1,000 - n){}^s S_y^0 + n(\text{graduated } {}^E S_y^t)}{1,000}$$

For blocks of more than 1,000 policy-years the graduated ${}^E S_y^t$ can be used directly to calculate an ${}^E ALR_t^x$ having sufficient credibility, and the range

of error at the 95 percent confidence level can be approximated by the formula

$$\varepsilon = 0.98 \left(\frac{\sqrt{n}}{n} \right).$$

Since the coefficient is close to unity, it can be dropped out without too much loss of accuracy, so that the formula may be written

$$\varepsilon = \frac{\sqrt{n}}{n}.$$

This formula for statistical error relies on the normative ALR_x of 60 percent. It is assumed that any ALR_x affecting rate decisions will generally lie in the range between 50 and 70 percent. At the 50 percent level the unity coefficient should be exactly 1.00. At the 70 percent and at the 30 percent level it should be 0.92. For higher or lower loss ratios the use of unity will increasingly overstate the credibility error, which is deemed conservative for this purpose.

In order to simplify regulatory determination of credibility factors, the following table of ranges is proposed.

Policy-Years of Experience (PY)	ALR_x Credibility Range	Source for ALR_x
$PY < 1,000$	Weighted $ALR_x \pm 3\%$	Weighted ${}^S S_y^0$
$1,000 \leq PY < 2,500$	$ALR_x \pm 3\%$	Graduated ${}^E S_y^0$
$2,500 \leq PY < 10,000$	$ALR_x \pm 2\%$	Graduated ${}^E S_y^0$
$PY \geq 10,000$	$ALR_x \pm 1\%$	Graduated ${}^E S_y^0$

In addition to graduation and credibility adjustments, recognition of econometric inflation levels should be included as part of the graduation algorithm for determining ${}^E S_y^0$ and in the ${}^S S_y^0$ factor used in the weighting formula for experiences of fewer than 1,000 policy-years. This can be accomplished by recalculating ${}^S S_y^0$ as it would have been if the observed medical care inflation component of the Consumer Price Index had been accurately foreseen at the time of the initial calculation.

The upper limit of the range thus derived is appropriate for testing against minimum loss ratio standards.

Further definitions follow:

$D_{x+n}^{p(n)}$ = Standard commutation function recognizing persistency as well

as survivorship to exact age $(x + u)$ after issue age x and the experience of the first t years from the original submission;

$$\bar{D}_x^{P(t)} = 0.5(D_x^{P(t)} + D_{x+1}^{P(t)});$$

$$N_x^{P(t)} = \Sigma D_x^{P(t)};$$

$$H_x = \bar{D}_x^{P(t)} S_x;$$

$$K_x = \Sigma H_x;$$

$$\pi_x = \text{Gross premium.}$$

Then if m is the limiting age of the coverage for both benefits and premiums,

$${}^sALR_x^0 = \left(\frac{{}^sK_x^0 - {}^sK_m^0}{{}^sD_x^{P(t)}} \right) / \pi_x \left(\frac{{}^sN_x^{P(t)} - {}^sN_m^{P(t)}}{{}^sD_x^{P(t)}} \right);$$

$${}^EALR_x^t = \left[\left(\frac{{}^EK_x^t - {}^EK_{x+t}^t}{{}^ED_x^{P(t)}} \right) + \frac{{}^ED_{x+t}^{P(t)}}{{}^ED_x^{P(t)}} \left(\frac{{}^sK_{x+t}^t - {}^sK_m^t}{{}^sD_{x+t}^{P(t)}} \right) \right] / \pi_x \left[\left(\frac{{}^EN_x^{P(t)} - {}^EN_{x+t}^{P(t)}}{{}^ED_x^{P(t)}} \right) + \frac{{}^ED_{x+t}^{P(t)}}{{}^ED_x^{P(t)}} \left(\frac{{}^sN_{x+t}^{P(t)} - {}^sN_m^{P(t)}}{{}^sD_{x+t}^{P(t)}} \right) \right].$$

In most cases ${}^sALR_x^t$ will equal ${}^EALR_x^t$, that is, the submission will be based on actual experience, unless the judgment of the actuary or the intervention of the regulator requires that they differ. In these cases the reasons for the differences should be documented and the amounts quantified as part of the rate-increase submission.

Now, introducing additional definitions,

MLR_x = Minimum loss ratio applicable at issue age x to the coverage under review;

TLR_x = Threshold loss ratio at issue age x for approval of rate increases;

PM_x = Threshold percentage margin at issue age x for insurer compliance action.

Then

1. $TLR_x > MLR_x$.
2. If ${}^EALR_x^t + \epsilon \geq MLR_x$, no action is required.
3. If ${}^EALR_x^t + \epsilon < MLR_x$, then an insurer submission is required and regulatory alert is triggered.
4. If ${}^EALR_x^t + \epsilon < (MLR_x - PM_x)$, then insurer submission is required, including proposed actions to bring ${}^sALR_x^t$ into line with MLR_x .
5. If ${}^sALR_x^t + \epsilon \geq TLR_x$, then insurer is presumed entitled to a rate

increase equal to $({}^sALR_i + \epsilon)/MLR_i$, subject to declination with reasons and alternative proposals by the regulators.

Actuarial assumptions for these calculations should be selected as realistically as possible, without margins in either direction for conservatism. In the absence of prior direct experience with a similar type of coverage, insurers should use industry or demographic data as a guide to expected experience. All assumptions should be stated in the actuarial submission; the source of the underlying experience data should be given, together with a full statement of the reasons why the actuary considers the source experience to be relevant to the submission; and any modifications to the source data required to make it applicable to the submission should be fully documented. The following data are needed for this purpose.

1. Description of the coverage.
2. Morbidity graduated by classification categories (e.g., age, sex, etc.).
3. Persistency graduated similarly.
4. Proposed gross premiums.
5. Mortality on a no-margin basis.
6. Investment returns on a market basis.
7. Expected weighting of sales across classification categories.

VI. PROPOSED EXPERIENCE-REPORTING FORMS

Routine experience reporting to regulatory authorities has traditionally been through the Annual Statement, particularly Schedule H, which is incorporated into the statement, and the Accident and Health Policy Experience Exhibit, which is submitted later in the year. These two reporting forms reflect long-standing practice in the casualty insurance business. They have less validity, however, for individual health insurance monitoring, since they depend on the short-term nature of the typical casualty contract.

Noncancelable and guaranteed renewable forms provide important guarantees over the life of the contract. Similar guarantees are now effectively required even for commercial forms, since cancellation or re-rating of those forms is required by regulators to be on a class basis. Hence, the basic premise of casualty insurance—that each year's experience can stand on its own for a coverage line viewed in the aggregate—does not hold for individual health contracts.

Since this premise is critical to the validity of Schedule H and the Accident and Health Policy Experience Exhibit, those reporting forms have little or no value as a basis for regulatory monitoring of experience. In fact, since the data required for the forms are not consistent with the

nature of the coverage, the loss ratios reported are misleading and can result in erroneous and damaging conclusions by consumerists and imperfectly advised legislators. Consequently, we conclude that the health insurance reporting forms now included in the NAIC Annual Statement are anachronistic and should be replaced with meaningful actuarial statistics that can aid the regulatory monitoring process.

Exhibit 1 outlines a draft Health Insurance Coverage Experience Exhibit based on the principles developed in this paper. Exhibit 2 illustrates the sort of supporting work papers that would be maintained. The underlying structure of the existing Accident and Health Policy Experience Exhibit has been preserved except where it reflects invalid actuarial reasoning. It is important to note that the proposed form is based on coverages rather than on policy forms. This reflects the observation that policy forms are often an irrelevant base for experience tracking and monitoring: an essentially similar form may replace an earlier form; a new form may include minor changes; or a single shell form may be used for several essentially dissimilar coverages. The coverage category (or categories) to which a particular form will be assigned will be identified at the time the policy form is submitted, so that the regulators can then review and approve the validity of the proposed assignment.

The need for revisions in Schedule H is less pronounced, since it aggregates experience, although the inclusion of ratios within the exhibit is potentially misleading and probably should be discontinued in favor of relying on the Health Insurance Coverage Experience Exhibit as the experience monitoring tool.

VII. POTENTIAL CRITICISMS OF THE PROPOSAL

Some possible criticisms of the premises underlying the proposal are discussed in this section.

1. *While the limitations of the loss ratios in Schedule H and the Accident and Health Policy Experience Exhibit are recognized, some regulators may want a way to view each calendar year's loss-ratio experience and so may be reluctant to replace these statutory forms.*

Response: Retention of these misleading forms will perpetuate the public and regulatory confusion that has existed up to now. Regulators and insurers are now seriously addressing the monitoring problem for the first time. Rather than add a new level of reporting that conflicts with what is conceded to be flawed (though blessed with the imprimatur of the NAIC), it would be best for actuaries both in regulatory and in industry positions to work together for the adoption of meaningful reporting forms.

EXHIBIT 1

PROPOSED HEALTH INSURANCE COVERAGE EXHIBIT FOR MONITORING EMERGING EXPERIENCE

Date of Filing: This exhibit is required to be filed not later than May 1, 1982

HEALTH INSURANCE COVERAGE EXPERIENCE EXHIBIT

Made by: Leapin' Lizards Life Insurance Company of Farout, Arizona

COVERAGE, POLICY NUMBERS, DATES ISSUED	PREMIUMS EARNED*	ORIGINAL ANTICIPATED LOSS RATIO	CURRENT ANTICIPATED LOSS RATIO†	MINIMUM LOSS RATIO	LOSS-CONTROL EXPENSES, INCURRED CLAIMS, AND INCREASE IN POLICY RESERVES*		COMMISSIONS INCURRED	COMMISSION AND EXPENSE ALLOWANCE	DIVIDENDS TO POLICY-HOLDERS INCURRED	POLICIES IN FORCE AT END OF PRECEDING YEAR	COMMENTS ON STATISTICAL CREDIBILITY AND OTHER QUALIFICATIONS OF REPORTED EXPERIENCE
					Amount	Percentage of Premiums Earned					
Major medical coverage MM 92; MM 102	\$286,392	52.4%	57.3%	50.0%	\$146,585	51.2%	\$24,874	1st year, 25% 2d-10th years, 6% 11th and subsequent years, 4%	\$0	800	The experience for the current year has only marginal credibility, since it reflects fewer than 1,000 policy-years of experience; caution should be exercised in interpreting these results

* Premiums earned are before adjustment for the increase in policy reserves that is included with claims; the increase in policy reserves is determined on a basis consistent with the assumptions for the anticipated loss ratio.

† Documented determination must be included in the work papers and available for Insurance Department examination.

EXHIBIT 2

SAMPLE REQUIRED WORK PAPERS TO BE KEPT WITH SUPPORTING DOCUMENTS FOR PERIODIC EXAMINATION

ACTUARIAL ASSUMPTIONS FOR ANTICIPATED LOSS RATIO								
Coverage Category:			Hospital Expense					
Policy Forms:			PFHE 102; PFHE 115					
Assumption	Value			Source		Modifications		
Experience morbidity	Age	$\$S_t^0$		120% of $\$S_t^0$		Five calendar years of experience, aggregating 100 policy years (15 policies now in force); actual aggregate claims = \$5,013.60	Due to low volume of actual experience, any graduation into experience classification cells is impractical and meaningless; hence aggregate experience was used to modify the $\$S_t^0$'s by using an actual-to-expected ratio: expected claims per $\$S_t^0$ = \$4,178; actual = \$5,013.60; ratio = 120%	
	Male							
	25	\$17.68	\$21.22					
	35	19.47	23.36					
	45	24.36	29.23					
	55	34.73	41.68					
	Female							
	25	\$20.33	\$24.40					
	35	21.41	25.69					
	45	25.58	30.70					
55	34.73	41.68						
Statistically standardized morbidity	Age	$\$S_t^s$	$\$S_t^s$	$\$S_t^0$		Experience morbidity weighted with standardized morbidity		
	Male							
	25	\$21.22	\$18.03	\$17.68				
	35	23.36	19.86	19.47				
	45	29.23	24.85	24.36				
	55	41.68	35.43	34.73				
	Female							
	25	\$24.40	\$20.74	\$20.33				
	35	25.69	21.84	21.41				
	45	30.70	26.09	25.58				
55	41.68	35.43	34.73					

Current-calendar-year experience can be examined by including on the reporting form provision for submission of the expected current-year loss ratio based on the original anticipated loss ratio assumptions, the actual current-year loss ratio with reserves calculated according to the anticipated loss ratio assumptions including persistency, and the ratio of the two.

- 2. Regulators may fear that the proposed monitoring structure could penalize policyholders when large losses accrue as a result of passive management. The regulators may argue that an insurer should not recoup all past losses on a form but should take action early enough to prevent the substantial buildup of such losses.*

Response: The dynamics of the marketplace will prevent the proposed structure from serving as a device to reward mismanagement at the expense of policyholders. If renewal premium rates increase above new-business rates available from competitors in the marketplace, policyholders who qualify will shift to new insurers, leaving the least healthy policyholders with the original insurer, which will usually cause higher losses even with the increased premiums. Hence, an attempt to recoup sizable past losses is a self-defeating business strategy even in the absence of regulatory restraint.

- 3. Regulatory actuaries may agree with industry actuaries in seeking reasonable credibility standards, but remain concerned that the standards be easily understood and applied.*

Response: The proposed credibility test is designed for simple application consistent with sound statistical reasoning. It avoids a slavish adherence to theoretical statistics by adopting a practical test that is consistent with the context in which it will be applied. The treatment of the anticipated loss ratio as a probability function behaving according to the binomial distribution is a major simplification allowing the development of very simple credibility tables. For fewer than 1,000 policy-years of experience a simple weighting is applied. For over 1,000 policy-years of experience the tests called for by regulation can be based appropriately on the simple table presented in Section V.

- 4. Regulatory actuaries may maintain that the current provision in section 52.45 of Regulation 62, which requires a higher minimum anticipated loss ratio for premium increases on existing policies because of "reduced acquisition and other expenses," should be retained. They may argue that the portion of the increased premium needed for expenses will not be as great as the corresponding portion of the preincrease premium.*

Response: This position would be valid only if the anticipated loss ratio submitted to support a premium rate increase were prospective only. Since the proposal views the coverage over the full lifetime of the block of policies, both prospective and retrospective, the apportionment of the premium is unaffected by the date of the submission. Furthermore, by including historical experience data the credibility of the anticipated loss ratio is enhanced and the anticipated loss ratio will trend asymptotically toward the true loss ratio at the time of termination of the last policy in the coverage block, which is the earliest time at which it can be known.

VIII. CONCLUSION

This paper discusses internal contradictions in the current structure of loss-ratio monitoring as it affects individual health insurance. It presents a proposal for rational monitoring of regulatory loss-ratio standards. The intent is to foster a discussion that can lead to constructive regulation, yielding health insurance products that meet public needs in a fair and positive way.

DISCUSSION OF PRECEDING PAPER

WILLIAM F. BLUHM:

Mr. Cumming is to be congratulated on a fine paper, which raises some excellent questions on the subjects of loss ratios and the monitoring of experience.

It should be pointed out that Mr. Cumming's critique is of a version of Regulation 62 that was not thoroughly renovated since first promulgated in 1972 until a task force, on which I had the pleasure of serving with Mr. Cumming, convened to do so in 1981. While I was a representative of the New York Insurance Department on that task force, my comments here are purely my own, and do not reflect any position of the department, either past or present. In presenting my comments, I will be referring to the new Regulation 62, which came as a result of the work of that task force. Many of the ideas contained in Mr. Cumming's paper were adopted; some were not.

In Section III of the paper, some important issues are raised, which I will refer to by number:

1. I would agree with this point, with a minor modification: The traditional statutory loss ratios, *as they have often been used*, are flawed as a basis for tracking emerging experience. That erroneous use has been to compare loss ratios against a given constant figure, such as the anticipated loss ratio. If, instead, we always compared such figures against the figures *expected*, under the same unrealistic statutory reserve basis used for the *actual* experience, then we could reasonably expect a very useful and meaningful comparison.

Regulation 62 uses just such a comparison in its monitoring system. Actual loss ratios are compared to expected loss ratios, generally to the level of sophistication desired by the insurer. An insurer is now required to differentiate between expected loss ratios by durations 1, 2, and 3+. Beyond that, an insurer can recognize any or all of the three factors mentioned by Mr. Cumming, as well as others such as durational antiselection reserves.

2. I must take strong exception to Mr. Cumming's characterization of individuals with medical costs but no insurance as "unscrupulous or lacking in foresight." There are also the unlucky, the ignorant, and the poor. For that reason, the value of underwriting must be viewed not only from the point of view of accepted policyholders and the company, but also from the general public's point of view.

3. Here I found a major disagreement with Mr. Cumming's position. My objections can be illustrated by considering a simple example: Suppose a policy form had expected claim costs of \$50, an anticipated loss ratio of 50 percent, per policy expenses of \$10, and percent of premium expenses of 30 percent. That leaves a profit of \$10.

If a company builds in a \$100 margin, and pays a dividend which is considered a benefit, that dividend need only be \$50 to maintain the same loss ratio. Even if 30 percent of the added margin goes to expenses, \$20 is added to the company's profit, in return for actually lowering the company's risk.

On the other hand, if the dividend were subtracted from premiums, it would have to equal 100 percent of the margin to maintain the same anticipated loss ratio. This would allow for neither expenses nor profit from the dividend/margin.

Regulation 62 allows either treatment of dividends. However, if they are treated as benefits, and if they exceed 15 percent of premium, the applicable minimum loss ratio is modified to account for the effect described above.

4. I agree totally with the initial statement. However, I disagree just as wholeheartedly with the statements in the second paragraph. The application of a higher loss ratio to premium increases after issue is to reflect the principle that acquisition expenses are incurred and fixed at the time of policy issue. The loss ratio figures that would apply in the absence of this modification contemplate the amortization of acquisition expenses. While the case might be made that allowances for ongoing expenses should be increased proportionately to the allocations for increases in claims costs, the acquisition expenses *cannot* increase, since they were fixed at issue.
5. Combining of experience has been allowed under all versions of Regulation 62. Theoretically, however, I think it should occur only when the different forms use consistent gross premium bases and where the sales markets for the forms are the same. Of course, there should be regulatory protection against use of such combinations to avoid disclosure of low loss ratios.
6. Regulation 62 recognizes credibility adjustments by size of exposure and type of coverage. The period of time does not appear relevant, except where the coverage is especially sensitive to cyclical swings or large, fluctuating reserves.
7. Mr. Cumming has referred to "data companies reasonably can be expected to maintain for management purposes." Based on my dealings with hundreds of life, accident and health, and property-casualty companies, I respectfully suggest that it is absolutely impossible to find even one item of record-keeping that all companies would agree should "reasonably be expected" to be kept. I am quite serious, and I include such items as earned premiums, paid claims, and so forth. To avoid number-messaging by companies, and to ensure that analysis is on a theoretically correct basis, I do believe it is necessary to specify a minimum level of record-keeping.

8. Like it or not, the public has decided that premiums and benefits must be "reasonable." The only workable definition of "reasonable" that has been put forward by the profession is in terms of "return on the dollar" or "loss ratios." The complement of minimum loss ratios is maximum profits and expenses. Monitoring of loss ratios simply ensures that the minimum *anticipated* loss ratios become (with some allowance for fluctuation) minimum *actual* loss ratios. Equivalently, maximum anticipated profits and expenses become maximum actual profits and expenses. This is simply an implementation of public policy using the best tools available.
9. Regulation 62 allows for modification or waiver of the minimum standards when the coverage is of "special and unique value to the public" and "where it has been demonstrated that the product cannot reasonably meet the otherwise applicable loss ratio standards."
10. Requiring companies to keep and use losses on a "year-of-incurral" (or "run-off," "runout," or "accident-year") basis would seem to contradict Mr. Cumming's item 7 prohibition against requiring experience data in "elaborate detail."
11. This, again, is a question of public policy. While we as actuaries may be highly qualified to explain the implications of such public policy decisions, we do not have any more right to dictate such decisions than any other knowledgeable citizen.

Section IV contains an interesting proposal that might work very well for a large company, with a small number of forms, and a sophisticated actuarial staff. If any one of those conditions were missing, the application of the described procedure would become burdensome and time-consuming. The amount of work proposed for the Insurance Department would likewise be onerous. Regulation 62 prescribes a simple actual-to-expected loss ratio test, and requires contact with the Insurance Department only when the result falls outside a predetermined corridor.

The technical formulation in Section V uses policy years of experience as a credibility measure. The theoretically preferable approach, I believe, would be to base the credibility on the number of claims. Even better would be an approach which accounted for variation in claim size as well as frequency. With the huge variety of benefit structures, however, such an approach would require costly simulations by each insurer for each coverage, and therefore is not practical.

The problem with using policy years of experience can be illustrated by comparing two coverages of widely differing frequencies of claim: (1) accidental death issued at all ages, and (2) hospital indemnity issued at age 65.

Accidental death has a country-wide frequency of about 0.00048.¹ If we choose a full credibility level at 95 percent probability of being within 5 percent of the expected level, and use a Poisson distribution, the necessary number of claims is 1,537.² This means that approximately 3,202,000 policy years of experience are needed for full credibility.

The frequency of senior citizen hospital indemnity coverage is roughly on the order of 0.25.³ At the same confidence level, only 6,148 years of policy experience would be needed for full credibility. From a classical statistical point of view, and ignoring size of claim, this means that you need 521 times the number of exposed life years for the accidental death coverage.

I would also add that the tremendous increase in the number of claims needed to be 95 percent confident of being within 3 percent, rather than 5 percent, would not appear justified to me in most cases.

My comments here are meant to be a frank discussion of the many important questions raised by Mr. Cumming's fine paper. The subjects of this paper have been too long ignored by the profession. It is good to see such probing attention being paid to them.

RICHARD H. DIAMOND:

The proper way to reflect developing experience in rate revisions for individual health policies is the subject of much disagreement within the actuarial profession. There is diversity both in the approaches of different companies and in the requirements of different states. The need for more uniformity is apparent. However, uniformity can be achieved only if some consensus is reached on basic principles. Mr. Cumming's paper is a valuable contribution to the debate that is necessary to reach such a consensus. Following are comments on two of the specific proposals in the paper.

The inclusion of loss-control expenses in the loss ratio is a new idea and strikes me as a good one. Under the current NAIC guidelines, loss ratio standards may be met easily by a guaranteed issue policy while a medically underwritten policy with a lower premium for the same benefits may fail to meet those standards. Mr. Cumming's proposal would alleviate this problem. However, it would be necessary to specify how these expenses are to be calculated. Expense allocation is an inexact science, and

¹ National Safety Council, *Accident Facts*, 1978 edition.

² L. H. Longley-Cook, *An Introduction to Credibility Theory* (Casualty Actuarial Society).

³ Tillinghast, Nelson, & Warren, Inc., *1974 Medical Tables*, III, 16-17. Age 72 male cost: 0.3017; age 72 female cost: 0.2320.

without a precise definition it would be possible to manipulate loss ratios by the choice of allocation method. Also, Mr. Cumming's statements that no change in the minimum loss ratio standards is needed to compensate for the inclusion of these expenses should not be accepted without further investigation.

The inclusion of policyholder dividends as benefits in the loss ratio also would permit manipulation. A policy that otherwise would not meet the minimum standards could be made to satisfy them by raising the premium and paying a dividend equal to the premium increase. For example, a \$500 policy with anticipated benefits of \$250 could satisfy a 55 percent minimum loss ratio by increasing the premium by \$60 and paying a \$60 dividend. It would be more equitable to include dividends as a reduction of earned premiums rather than as a benefit.

(AUTHOR'S REVIEW OF DISCUSSION)

JOHN B. CUMMING:

The purpose of this paper was to raise controversial issues involved in the monitoring of individual health insurance policy experience. The hope was that the resulting discussion might clarify thinking on some of the major regulatory issues. Judging by the discussion of which the author has been aware, both formal and informal, that purpose has been achieved. I am particularly grateful to Messrs. Bluhm and Diamond for taking the time to put their discussions in a form suitable for publication in the *Transactions*.

Mr. Bluhm has prepared thought-provoking comments on each of the issues raised in the paper. This is particularly helpful in clarifying areas of agreement and disagreement among actuaries on these questions.

Despite Mr. Bluhm's comments on my issue 1 in Section III of the paper, I still hope that dialogue among actuaries will lead eventually to adoption of a loss ratio standard that will better serve all likely audiences for these numbers. While Mr. Bluhm's point concerning the relationship of actual-to-expected loss ratios has much validity regardless of the basis of computation, the confusion which now results among both legislators and the public seems unnecessary.

In arguing issue 2, my characterization was not, of course, directed to the unfortunates of our society. I believe firmly, however, that the burden of the unfortunates should fall more evenly than is the case if we assign that cost solely to the insured public, particularly that segment of the insured public who require and purchase individual medical insurance.

Issue 3 has led to several comments, all of which have the same force. Mr. Bluhm's response assumes that dividends would be added to the

numerator in calculating loss ratios. Mr. Diamond makes the same point, as have others privately. While an argument can be made for including dividends as a policy benefit in the numerator, the difficulty these people have identified can be avoided by subtracting the dividend from the denominator, as is suggested by both Mr. Bluhm and Mr. Diamond. The allusion in the paper was to an earlier view of some regulators that dividends be disregarded altogether in monitoring policy experience results relative to those anticipated.

I disagree with Mr. Bluhm in issue 4, since I believe that, by reverting retrospectively to the time of policy issue, the method of loss ratio analysis proposed in the paper does precisely what Mr. Bluhm here seeks to accomplish.

Moving to issue 7: companies can be reasonably expected to maintain data sufficient for their managements to evaluate the ongoing financial soundness of their operations. The level of detail maintained will vary by size of company and astuteness of the management, but in all cases will suffice for the purposes propounded in the paper.

Mr. Diamond's remarks are quite helpful. His support for the inclusion of loss-control expenses in the loss ratio is appreciated. His cautions are well taken and should be considered in any effort to give practical effect to this proposal.

In addition to Messrs. Bluhm and Diamond, the author is appreciative of all who have taken the time to read and discuss this paper, whether privately or for publication. I would also like to thank Willis W. Burgess, Spencer Koppel, Robert C. Nuding, and Peter M. Thexton, all of whom were helpful in the inception of this paper. Finally, I am indebted to Bryn T. Douds for checking the formulas and other technical aspects of the paper.