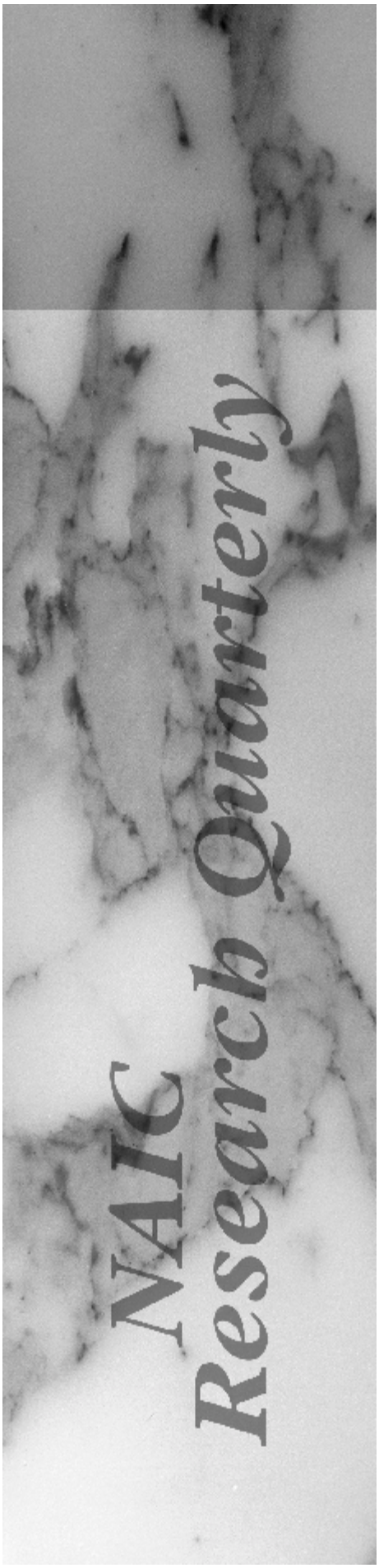

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Estimating the Uninsured Vehicle Rate from the Uninsured Motorist/Bodily Injury Ratio

By Lyn Hunstad, California Department of Insurance

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Credibility and Regulation

By Diana Wright *(NAIC/SSO)*

What is the correct health insurance premium rate to charge insureds living in a particular state? The answer to this question is never clear-cut and always involves credibility considerations. Actuaries ask this question whether they are reviewing premium rate filings as regulators or developing premium rates for industry. Premium rate determination, however, is not the only instance when credibility should be taken into consideration. Credibility is also an issue when reserves are calculated.

Highlights from the 1997 Statistical Compilations for Property/Casualty and Life/Health Companies

By Ray Spudeck *(NAIC/SSO)*

The NAIC Research Department has released the 1997 editions of the Statistical Compilation of Annual Statement Information for both property/casualty and life/health companies. The reports contain aggregate annual statement financial data for all companies reporting to the NAIC. Countrywide and state specific direct insurance data from Schedule T and the state pages (NAIC Annual Statement Page 15 for property/casualty and page 21 for life/health companies) are also included. Statistical information from life/health combined annual statements are not available in the 1997 report since companies are no longer required to submit these statements.

The Statistical Handbook of Data Available to Insurance Regulators

By Natalai Webster Hughes *(NAIC/SSO)*

The statutory foundation for statistical reporting stems from a long history, which began with the concept that certain market imperfections justified close public supervision of the insurance business. This supervision primari-ly took the form of: 1) solvency surveillance to help

supervision primarily took the form of: 1) solvency surveillance to help ensure that insurers can pay the losses they have promised to pay or have contracted and 2) rate regulation to help ensure that rates are not excessive, inadequate or unfairly discriminatory. In more recent years, rate regulatory functions have evolved to include more attention to the monitoring of markets and competition.

 Defining an Insurance Market: Some International and U.S. Comparisons

By Eric Nordman and Ray Spudeck *(NAIC/SSO)*

Current discussion within the insurance industry is replete with references to globalization of insurance markets and the frenzied pace of merger and acquisition among domestic and international insurers. Certainly, international access to insurance is facilitated by these combinations along with advances in Internet and other electronic communication technologies. At the same time, there is much discussion here at home about the current system of state regulation and the perception that this form of regulation puts domestic insurers at a competitive disadvantage in the global marketplace.

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The National Association of Insurance Commissioners (NAIC) is a voluntary organization of the chief insurance regulatory officials of the 50 states, the District of Columbia, American Samoa, Guam, Puerto Rico and the Virgin Islands. The NAIC provides its members with a forum for discussing common interests and for working cooperatively on regulatory matters that transcend the boundaries of their own jurisdictions.

The views expressed in these articles do not necessarily represent the view of the NAIC members, individually or collectively.

Contents

From the NAIC Staff

This issue marks the beginning of the fifth year of publication of the *NAIC Research Quarterly (RQ).* The NAIC staff would like to take this opportunity to thank each of our readers and those who contribute articles for inclusion in the *RQ*. The *RQ* continues to provide an excellent opportunity for insurance regulators and industry personnel to share ideas and experiences. During 1998, past issues of the *RQ* were placed on the NAIC web site at www.naic.org. This has greatly increased the access and readership of the publication.

We encourage our readers to submit articles for inclusion in the *RQ*. Both technical research pieces and non-technical informative and perspective pieces are gladly accepted for inclusion in the publication. We also encourage each of you to give us your input regarding the issues found on the web site and any other comments you may have regarding the publication. For information regarding the submission of articles or to provide comments, you may contact Teresa Walker at 816-889-6818 or by e-mail at twalker @naic.org.

Estimating the Uninsured Vehicle Rate from the Uninsured Motorist/ Bodily Injury Ratio

by Lyn Hunstad, California Insurance Department

Note: Comments and interpretations in this report are those of the author and do not represent official policy of the commissioner of the department.

This paper examines the assumptions involved in using the ratio of the frequency of uninsured motorist (UM) claims to the frequency of bodily injury (BI) claims as an estimate of the uninsured vehicle rate. Possible sources of biases include: including hit-and-run accidents in UM claims, different rate of UM fraud, those with UM coverage not representative of those without, higher accident rate of uninsured drivers, higher likelihood of filing a claim and having it paid for UM claims, and including property damage only (PDO) accidents in the UM claim frequency. It appears that several of the biases cause the UM/BI ratio to overestimate the uninsured vehicle rate. For some of the biases it was not possible to locate empirical evidence that would establish the direction of bias. It appears that some of the biases act to cancel each other out, but the overall bias inherent in the UM/BI ratio is to overstate the uninsured vehicle rate. The lack of a demonstrated stability in the several biases makes it questionable to use a time series of UM/BI ratios to estimate the trend in uninsured vehicles over time.

Introduction

An alternate method for estimating the uninsured vehicle (UV) rate involves calculating the ratio of the frequency of uninsured motorist (UM) claims ($UM\text{-}BI_{freq}$) to the frequency of bodily injury (BI) claims (BI_{freq}). This ratio has been described as a reasonable proxy for the number of injury accidents caused by uninsured motorists or hit-and-run motorists (see page 4, Insurance Research Council, 1989). However, the "reasonableness" of the proxy has never been thoroughly evaluated. The purpose of this analysis is to estimate the conditions that would be required in order for the UM/BI ratio to be an accurate measurement of the UV rate and to consider how reasonable they are.

To start with we define the key terms:

$UV\ rate = UV / (UV + IV)$, where [1]

- UV = number of vehicles on-the-road[1] without liability insurance coverage, and
- IV = number of vehicles on-the-road with liability insurance coverage.

$UM\text{-}BI_{freq} = C_{UM\text{-}BI} / EE_{UM\text{-}BI}$, where [2]

- $C_{UM\text{-}BI}$ = number of UM-BI claims, and
- $EE_{UM\text{-}BI}$ = number of years of earned exposure for UM-BI coverage.

[1]Note that the definition of the UV rate refers to the vehicles *on-the-road*. The purpose in limiting the UV rate in this manner is so that it will measure the rate of violating the mandatory insurance law. There is no requirement for vehicles not operated on public roadways to be insured. There is a lack of definitive data on the number of uninsured vehicles not used at all or not used on public roads. The upper bound of the percent of uninsured vehicles not used on public roads may be as high as 50 percent (Hunstad, 1998).

In order for the non-use of some uninsured vehicles to influence the UV rate estimated by using the UM/BI ratio method, it would be necessary for the percent of vehicles not used on public roads to be the same for UVs and IVs. This seems unlikely.

$BI_{freq} = C_{BI} / EE_{BI,}$ where

[3]

- C_{BI} = number of BI claims, and
- EE_{BI} = number of years of earned exposure for BI coverage.

Hit-and-Run Accidents

At the outset it should be noted that UM claims include claims due to hit-and-run accidents. If the vehicle that caused the accident and then ran was uninsured, the accuracy of the UM/BI ratio is not affected because the accident would have been classified as caused by an uninsured driver even if the driver stopped and took responsibility. However, if the vehicle that caused the accident and then ran was insured, the number of UM claims due to uninsured drivers and the UM claim frequency is overstated. This results in the UM/BI ratio being inflated, which yields an *overstated* estimated UV rate.

In 1996, the California Highway Patrol (CHP) reported 21,496 hit-and-run injury accidents in California. This reflects 11 percent of all injury and fatal accidents reported in 1996. Unfortunately, by the very nature of a hit-and-run accident, it is not possible to tell much about the vehicle fleeing the scene. It is not known whether uninsured vehicles or insured vehicles are more likely to flee after causing an accident, all other things equal. With greater exposure to personal liability, the uninsured driver would seemingly have a greater incentive to flee. However, the decision to flee may not be an entirely rational one. Insured drivers could fear legal involvement and higher insurance costs. Also, there is a much higher percentage of insured vehicles on-the-road.

Data from the California Department of Motor Vehicles (DMV) and the California Department of Justice do show that younger drivers do have a relatively higher rate of arrest for hit-and-run accidents (Aizenberg, 1997). Since younger drivers are more likely to be uninsured, it is reasonable to assume that hit-and-run drivers are more likely to be uninsured than the general driving population. If the percent of all UM claims include about 11 percent due to hit and run drivers, and if about 60 percent of these hit-and-run claims were actually caused by an insured driver,[2] then about 7 percent (60 percent * 11 percent) of the UV claims were really caused by an insured driver. If these 7 percent of the UM claims were reclassified as a BI claim for the purposes of calculating the UM/BI ratio, the resulting estimated UV rate would be about 3 percentage points lower (e.g., and estimated UV rate of 32 percent would drop to 29 percent).

Assumptions Underlying UV Estimate

In order for a claim to occur, three things must happen (assuming the claim is not fraudulent).[3]

[2]The data from a separate analysis of CHP-issued violations seems to indicate that even more than 60 percent of the hit-and-run accidents may be caused by an insured driver. In 1997, only 11 percent of the drivers cited for hit-and-run were also cited for being uninsured. Based only on this data the estimated percent of hit-and-run accidents caused by an insured driver would be 89 percent, not 60 percent. However, in 1996 it appears that only about 14 percent (3,070 / 21,496) of the hit-and-run drivers were caught and cited. It is not possible to determine if those who were caught and cited are representative of those who were not caught.

[3]Given that at least some amount of fraud is an almost certainty, the assumption of a non-fraudulent claim needs to be examined in greater detail. The issue relevant to the UM/BI ratio method is whether the rate of fraud is higher in UM-BI claims or BI claims. This is a difficult area to get definitive information on. Conversations with fraud investigative staff indicate that some insurers are less likely to investigate and report suspected fraud in a UM claim. This is due to the first-party relationship with the claimant in a UM claim, the possibility of a bad faith accusation, and the frequent lack of any other witness. The insurer is likely to take a harder stance in dealing with a third-party claimant in a BI claim. Because of this, some believe that fraud is easier in UM claims than in BI claims and more difficult to detect.

On the other hand a 1996 study by the Insurance Research Council found a greater incidence of the appearance of fraud in BI claims compared to personal injury protection (PIP) claims. In this study 36 percent of the BI claims and 21 percent of the PIP claims were classified as having the appearance of fraud. While PIP coverage is not the same as UM coverage, they are

First there must be an accident where a loss occurs. Second, the individual experiencing a UV loss or causing a BI loss must have insurance for the loss. And finally, the individual must report the loss to his or her insurance company and a claim for the loss must be filed and paid. These conditions can be written algebraically as:

$C_{UM\text{-}BI} = UV * r_{UV} * P_{UM} * P_{UM\text{-}C}$, where [4]

- r_{UV} = the rate that drivers of UV are considered at-fault in an injury accident
- P_{UM} = the probability of any vehicle having UM-BI coverage
- $P_{UM\text{-}C}$ = the probability of filing a UM-BI claim given being injured in an accident caused by an uninsured motorist and having UM coverage, and the claim being paid.

$C_{BI} = IV * r_{BI} * P_{BI\text{-}C}$, where [5]

- r_{BI} = the rate that drivers of IV are considered at-fault in an injury accident
- $P_{BI\text{-}C}$ = the probability of filing a BI claim given being injured in an accident caused by an insured motorist, and the claim being paid.

Since,

$IV = (IV + UV) * P_{BI}$, where [6]

- P_{BI} = the probability of having BI coverage

Equation [5] can be rewritten as:

$$C_{BI} = (IV + UV) * r_{BI} * P_{BI} * P_{BI\text{-}C} \quad [7]$$

both a first-party-type of coverage and so they should share some similarities. However, the comparison of BI to PIP fraud is somewhat biased due to the different areas the claims were sampled from. PIP claims only came from states with no-fault insurance.

At this point in time, it is difficult to say whether fraud is greater in BI claims than in UM claims. If the comparison of BI to PIP applies to BI and UM claims, then the BI claims would be overstated relative to UM claims. This overstatement of BI claims would tend to underestimate the UV rate using the UM/BI ratio method. If the UM claims tend to have more overstatement due to a higher fraud rate, then the estimated UV rate would be overstated.

The issue to be resolved can be rephrased as, "When does the UV rate equal the $UM\text{-}BI_{freq}$ divided by the BI_{freq}?" Or, alternately, when does

$$\frac{UV}{(UV+IV)} \approx \frac{C_{UM\text{-}BI} / EE_{UM\text{-}BI}}{C_{BI} / EE_{BI}} \quad [8]$$

or

$$\frac{UV}{(UV+IV)} \approx \frac{UV * r_{UV} * P_{UM} * P_{UM\text{-}C} / EE_{UM\text{-}BI}}{(IV+UV) * r_{BI} * P_{BI} * P_{BI\text{-}C} / EE_{BI}} \quad [9]$$

Since the ratio P_{UM} / P_{BI} is estimated by the ratio $EE_{UM\text{-}BI}$ / EE_{BI} these terms cancel each other out. In effect, by using the claim frequencies, we do not need to be concerned about the probability of a consumer purchasing UM-BI coverage given that they have purchased BI coverage. This also points out the assumption implicit in the UM/BI ratio approach: the UM claim frequency of consumers *with* UM coverage is representative of those drivers *without* UM (and possibly any) coverage.[4] That is, uninsured drivers are equally likely to be considered at fault in accidents with individuals who have UM coverage as with individuals who do not have UM coverage. We are not aware of any data that would show this assumption to be incorrect. However, to the extent that the UM claim frequency is not representative of the broader population, a bias would be introduced into the estimated UV rate.

With the P_{UM} , P_{BI} , $EE_{UM\text{-}BI}$, and EE_{BI} terms removed, equation [9] is reduced to:

$$\frac{UV}{(UV+IV)} \approx \frac{UV * r_{UV} * P_{UM\text{-}C}}{(IV+UV) * r_{BI} * P_{BI\text{-}C}} \quad [10]$$

From equation [10] we can see that the equality between the UV rate and the UM/BI ratio is established when:

[4]An analysis of data on earned exposures in California from 1992 to 1995 indicates approximately 87 percent to 88 percent of the vehicles with BI also have UM coverage. At this point in time, there are no data that indicate the insureds with UM coverage are different from insureds without UM coverage.

$r_{UV} * P_{UM-C} = r_{BI} * P_{BI-C}$ [11]

The simplest way for equation [11] to be true would involve:

$r_{UV} = r_{BI}$ [12]

$P_{UM-C} = P_{BI-C}$ [13]

Ignoring the previous caveats temporarily, the issue of the accuracy of the UM/BI ratio's approximation for the UV rate reduces to the question of the accuracy of equation [11] (and implicitly, equations [12] and [13]).

Rate of Accident Involvement

How similar is the accident rate among uninsured and insured drivers? Unfortunately we do not have any direct data to shed light on this issue. However, we do know something about who is likely to be an uninsured motorist. According to surveys, uninsured motorists tend to be:

- younger
- less educated
- receiving less income
- renters of their home
- spending less time in their home
- Hispanic or African American

Income and ethnicity are not currently used as rating factors for estimating the accident potential (and hence the premium). However, age and the purchase of a homeowners policy are auto rating factors many insurers use. Proxies for education, discounts oriented to certain professionals, are used by some insurers. The use of age, or its proxy years of driving experience, is almost universal. For each of these factors the profile presented by the uninsured motorist would be considered a higher risk. Age in particular is a very influential risk factor.

In an analysis of CHP data from January 1988 to July 1989, Marowitz (1991) reported "44.6 percent of motorists involved in BI accidents were uninsured, while only 34.2 percent of CHP traffic citations were given to UMs. Since unsafe driving behavior is more likely to be evidenced in repeated citations than in accidents, the rate of UMs in accidents would be expected to be less than the rate for citations. Since it is greater, it appears that UMs are overrepresented in BI accidents and that BI accidents involve a biased sample of UMs. Thus, BI accidents cannot be used for estimating the rate of UMs."

From this evidence it would appear that a more likely hypothesis is that the rate of accidents for uninsured motorists is greater that the rate of accidents for insured motorists, or

$r_{UV} > r_{BI}$ [14]

To determine how much greater we need a more accurate description of the uninsured population. From this detailed description of the population an actuarial assessment of the risk level associated with that population could be estimated and the extent of the bias could be quantified. Using only the age rating factor, it is not uncommon to find the risk level of younger drivers to be twice that of the risk level associated with older drivers.

If equation [14] is true than it follows that

$r_{UV} / r_{BI} > 1$ [15]

and this implies that the UM/BI ratio would tend to *overstate* the actual UV rate.

Claiming Behavior of UM vs. BI Victims

Given that an accident has occurred, an injury is sustained, and the other party is at fault, what is the likelihood that the injured party will file a claim and it will be paid? More specifically, if the accident is caused by an uninsured motorist and the injured party has UM coverage, is the insured more or less likely to file a claim than an injured person in an accident caused by a driver with BI coverage?

Another way of looking at this is, when would a claim not be filed? When an accident is caused by a driver with insurance, a claim filing could be avoided if the driver negotiated a settlement directly with the injured person. The insured driver might be motivated to settle directly with the injured person if they were concerned about increased insurance costs and the injuries were relatively minor. As the distribution of BI losses is biased toward lower loss amounts, a large number of BI accidents would likely fall into the category

of relatively minor injuries. A recent survey by the Independent Insurance Agents of America (IIAA) estimated that 17 percent of all drivers had paid for damages out of pocket rather than file a claim (IIAA, 1998).

A similar type of direct settlement between the parties is possible when the accident was caused by an uninsured motorist. However, if the reason the uninsured motorist does not have insurance is due to a lack of income or assets, the likelihood of a direct settlement between the parties seems less likely. If this is the case, then:

$$P_{UM\text{-}C} > P_{BI\text{-}C}, \text{ or} \quad [16]$$

$$P_{UM\text{-}C} / P_{BI\text{-}C} > 1 \quad [17]$$

Equation [17] would imply that the UM/BI ratio would tend to *overstate* the actual UV rate.

This overstatement could be further magnified by the practices of insurers. Khazzoom (1997) has pointed out that insurers are likely to be more liberal in processing UM claims as these claims involve their own policyholders, whereas BI claims by a third party are more likely to be rejected. This would lead to an upward bias in the claim frequency of UM compared to BI. This would result in the UM/BI ratio further overstating the actual UV rate.

Combining the Factors

The factors that have been identified as likely to affect the accuracy of UV rate estimates based on the UM/BI ratio include: inclusion of hit-and-run accidents in the UM frequency, the likely higher accident rate of uninsured drivers, and the claiming behavior of UM vs. BI victims. For each of these factors the bias introduced is one of *overstating* the actual UV rate. The effect of each of these biases is cumulative. When all the sources of bias are considered simultaneously, the effect is greater than any one of the individual biases.

An approximated effect was estimated for the inclusion of hit-and-run accidents in the UM claim frequency. An estimated UV rate of 32 percent was reduced by about 10 percent to a partially adjusted UV rate of 29 percent. If the other two sources of biases introduced a similar sized bias, the combined effect of the three biases would yield an adjusted estimated UV rate of 23 percent (= 32 percent * 90 percent * 90 percent * 90 percent). It bears repeating that at this point in time we do not have any empirical estimates of the difference in accident rates or claiming behavior. Also, we do not know how a different UM fraud rate or lack of representativeness among those with UM coverage would affect the estimated UV rate. Subjectively, it seems that the bias because or differential accident rates is greater than the bias because of differential claiming behavior.

UV Rate Estimates

Data from the California Department of Insurance's Statistical Analysis Bureau were used to calculate an unadjusted UV rate based on the UM/BI ratio. These data cover the years 1991 to 1995 and are subject to extensive editing and data cleaning procedures. It is important to note that the UM data used here only refers to UM-BI exposures and claims. This is important because the assumptions underlying the use of the UM/BI ratio assume that the UM claim frequency is only measuring the frequency of *injury* accidents caused by uninsured motorists. Many sources of UM data do not differentiate UM-BI exposures and claims from UM-PD (PD stands for property damage) exposures and claims. Including a count of property damage only (PDO) accidents caused by uninsured motorists would inflate the UM frequency and overstate the estimated UV rate.

As can be seen in Table 1, the unadjusted estimated UV rate ranged from 32 percent to 35 percent during the 1991 to 1995 time period. The low of 32 percent was estimated in both 1991 and 1995, the high of 35 percent was estimated for 1993. As was expected from the preceding discussion of the biases associated with this process, these unadjusted estimates seem very high. If these unadjusted UV rate estimates were adjusted using the hypothetical bias amounts referred to previously, the adjusted UV rate estimates would be in the 23 percent to 26 percent range. These adjusted UV rate estimates are lower than the 29 percent to 32 percent UV rate estimates derived from the UV model based on using total vehicle counts and number of insured vehicles for the years 1991 to 1996 (described in Hunstad, 1999). This could imply that some of the

biases affecting the UV rate may be lower. A more likely hypothesis is that some of the biases act to inflate the UV estimate, and some of the biases act to deflate the UV estimate. To some extent, some of the biases may offset each other.

Summary and Conclusion

Potential biases contained in a UV rate estimated from the UM/BI ratio can be seen in Table 2. The biases for which the direction of the bias can be reasonably established all point to an inflated UV rate estimate. The precise size of each bias is difficult to establish. It appears that some of the biases may offset each other.

Without a more accurate measurement of the identified biases associated with the UM/BI ratio method for estimating the UV rate, the method seems unlikely to produce an accurate estimate of the true UV rate. In a similar light, the use of a time series of the UM/BI ratio to gauge the relative improvement or deterioration of the UV rate seems questionable. Until the magnitude and stability over time of the different sources of biases can be established, it is impossible to tell if a year-to-year change in the ratio is due to a change in the actual UV rate or a change in one of the biases affecting the estimate.

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Table 1
UM and BI Claim Frequencies and Estimated UV Rate

	Year	Exposure	Number of Claims	Claim Frequency	UM (freq)/BI(freq)
BI					
	1991	13,915,140	244,688	0.017584	32.1%
	1992	13,652,545	233,601	0.017110	33.2%
	1993	13,434,840	223,310	0.016622	35.4%
	1994	13,628,312	239,777	0.017594	34.0%
	1995	13,887,382	240,469	0.017316	32.2%
UM					
	1991	11,729,692	66,186	0.005643	
	1992	11,695,698	66,522	0.005688	
	1993	11,598,263	68,242	0.005884	
	1994	11,784,243	70,443	0.005978	
	1995	11,867,424	66,119	0.005571	

Table 2
Potential Biases Contained in the UM/BI ratio

Source of Bias	Effect on the Estimated UV Rate
Including not operated vehicles in the UV rate	unknown
Including hit-and-run accidents in UM claims	increase
Different rate of UM fraud	unknown
Those with UM coverage not representative of those without	unknown
Higher accident rate of uninsured drivers	increase
Higher likelihood of filing a claim and having it paid for UM claims	increase
Including PDO accidents in the UM claim frequency	increase

Credibility and Regulation

by Diana Wright (NAIC/SSO)

What is the correct health insurance premium rate to charge insureds living in a particular state? The answer to this question is never clear-cut and always involves credibility considerations. Actuaries ask this question whether they are reviewing premium rate filings as regulators or developing premium rates for industry. Premium rate determination, however, is not the only instance when credibility should be taken into consideration. Credibility is also an issue when reserves are calculated.

The Actuarial Standards Board has dedicated a separate actuarial standard of practice to the issue of credibility – ASOP No. 25, Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages. In that standard of practice, the purpose of credibility procedures is defined as follows:

> The purpose of credibility procedures is to blend information from subject experience with information from one or more sets of related experience when the subject experience does not have full credibility in order to improve the estimate of expected values, or to determine when the subject experience should have full credibility and blending is unnecessary.

Because of the importance of credibility, it is a frequent topic in actuarial discussions. At the NAIC, the Accident and Health Working Group of the Life and Health Actuarial (Technical) Task Force began discussions on credibility for limited benefit health insurance during 1998. In 1999, the working group will continue those discussions and expand to credibility issues associated with long-term care and disability income products. Additionally, the Society of Actuaries offered a seminar in 1998 dedicated to credibility and has established a committee to study credibility.

In this article, I list issues involving credibility, identify how current NAIC models address credibility for health insurance, list credibility requirements for health insurance in Florida and New York, and finally, propose some additional questions when considering credibility issues.

I. Credibility Issues

There are basically three levels where credibility questions arise. They are:

a) A single policy form experience versus combined experience for similar policy forms,
b) State experience versus nationwide experience, and
c) Specific group or association experience versus combined group experience.

A. Premium Rates

1) Single Policy Form – Original Rates For a New Policy Form

What was the basis for the rates? Were they developed from the experience of similar policies the carrier has in force or were they based on broader based statistics, such as industrywide statistics or a manual purchased from a consulting firm? If carrier-specific experience of similar inforce policies was used, was the data **credible**?

2) Single Policy Form – Renewal Rates

When is it acceptable to use the experience for a single policy form as the **sole** basis for determining renewal rates? This is especially critical when a policy form is new and when a policy form has become a closed block of business. If the policy form experience is not 100 percent credible, then how should the appropriate rate be determined?

3) State Experience vs. National Experience

When is it acceptable to use the policy form experience for a state as the **sole** basis for determining renewal rates? If the state experience is not 100 percent credible, then how should the appropriate rate be determined (e.g., blending with the nationwide experience)?

4) Specific Group or Association Experience

When is it acceptable to use the experience for a specific group or association as the **sole** basis for determining renewal rates? If the group (or association) specific experience is not 100 percent credible, then how should the appropriate rate be determined (e.g., blending with the experience for other groups)?

B. Reserves

Credibility issues similar to those in premium rate determination also arise in reserve calculations. Questions concerning 100 percent credibility versus blending arise with regard to reserves at the policy form, state and group levels.

II. NAIC Models

NAIC models address two of the three levels of rate determination identified above: single policy form versus combined policy forms and group or association versus policy form. State experience versus national experience is not specifically addressed in any of the NAIC models.

NAIC models for group health conversions, Medicare supplement insurance, long-term care insurance, individual health insurance rating, and health insurance reserves address credibility at the policy form level from all aspects – prohibiting the use of specific experience, a general statement that credibility should be considered, or requiring a specific formula for credibility adjustments.

- The Group Health Insurance Mandatory Conversion Privilege Model Act prohibits the use of specific experience by stating "the experience under converted policies shall not be an acceptable basis for establishing rates for converted policies."

- Whereas, the Model Regulation to Implement the Small Employer Health Insurance Availability Model Act requires certification from "a qualified actuary that the new rating method would be based on objective and credible data ..."

- Similarly, the Long-Term Care Insurance Model Regulation and the Guidelines for Filing of Rates for Individual Health Insurance Forms require that statistical credibility be given "due consideration." The Guidelines for Filing of Rates for Individual Health Insurance Forms further states that similar policy forms "may be combined for purposes of evaluating experience data, ... particularly where statistical credibility would be materially improved by such combination."

- The Health Insurance Reserves Model Regulation contains two provisions permitting use of an insurer's experience, if considered credible, as a basis for disability reserves. The first provision is for claims with durations less than two years from the date of disablement. The second provision is for group disability income claims with durations greater than two years but less than five years, from the date of disablement. A drafting note in the model clarifies the second provision by stating that an insurer's experience should be considered credible if there are at least 5,000 claim terminations during the third though the fifth claim durations on "reasonably similar applicable policy forms" over no more than six years.

- The Medicare Supplement Insurance Model Regulation establishes credibility adjustments based on the cumulative number of covered lives for the refund calculation. Experience policy forms of the same plan type (Plan A, B, etc.) and within a particular state are combined for the refund calculation. In the calculation, data for 10,000 and greater life-years are considered fully credible and fewer than 500 life-years are considered not credible at all.

The Small Employer and Individual Health Insurance Availability Model Act addresses specific group or association experience. The model requires that community-adjusted premium rates vary only by geographic area, family composition, or age, and may not reflect the experience of a particular group. However, the model also permits bona fide professional

associations with 2,000 or members to be rated separately.

III. State Regulation

Few states have published credibility guidelines for health insurance rating. Florida and New York are two states that have and their approaches are distinct.

Subsection (4)(e), Definitions, in Florida Regulation 4-149.006 contains the following definition for credible data:

> If a policy form has 2000 or more policies in force, then full 100% credibility is given to the experience; if fewer than 500 policies are inforce, then zero credibility is given. Linear interpolation is used for inforce amounts between 500 and 2000. For group policy forms, the numbers in this definition refer to group certificates, not policies. A combination of Florida and nationwide data shall be used only if Florida-only data is not fully credible. Specific alternate credibility standards for particular lines of business shall be submitted to the Department by affected insurers ....

New York's Regulation 62 contains a table of ratios based on the number of reported claims in the period. The table ratios are the ratio of the actual loss ratio to the expected loss ratio and are used to indicate when an insurer is required to take corrective action such as premium reductions, dividends or benefit increases. The range in the table permitted for the actual-to-expected loss ratios without precipitating corrective action is inversely related to the number of reported claims in the period. The range decreases as the number of reported claims increases.

IV. Additional Considerations

Below are some additional issues that the Accident and Health Working Group might consider as their discussions on credibility continue during 1999.

a) Should credibility formulas differ based on the entity [e.g., insurance carrier, health maintenance (HMO), or provider services organization (PSO)]?

b) Should there be separate formulas for original filings of a new policy form versus renewal rating? The basis for this question is that original filings are often based on data that is considered to be 100 percent credible whereas renewal rating is often only partially credible. Mathematical models for partial credibility and full credibility are incongruous in that the common partial credibility ratio of "n" divided by "n + k" does not ever theoretically reach 1.00.

c) Should credibility formulas differ by product? If the formula is based on the number of claims, then the formula may not need to vary by product. Would the claim frequency of the product automatically reduce credibility for products having low claim frequency?

d) How should the credibility formula reflect the variability of claim severity? Classical credibility techniques historically have been based primarily on claim frequency, and claim severity was a subjective adjustment.

e) Instead of establishing credibility levels in regulations, should regulations require carriers to develop and file credibility methods that carriers will use consistently across all policies within a specified category? This specified category could be at the product level (e.g., medical, disability, long-term care, etc.) or group/individual level. This requirement could address the concern that credibility methods might be selectively chosen to produce a desired result.

Additionally, the working group will continue the dialogue with the Society of Actuaries Credibility Committee and welcomes comments concerning credibility from regulators and other interested parties.

Highlights from the 1997 Statistical Compilations for Property/Casualty and Life/Health Companies

by Ray Spudeck (NAIC/SSO)

The NAIC Research Department has released the 1997 editions of the *Statistical Compilation of Annual Statement Information* for both property/casualty and life/health companies. The reports contain aggregate annual statement financial data for all companies reporting to the NAIC. Countrywide and state specific direct insurance data from Schedule T and the state pages (NAIC Annual Statement Page 15 for property/casualty and page 21 for life/health companies) are also included. Statistical information from life/health combined annual statements are not available in the 1997 report since companies are no longer required to submit these statements.

Highlights from the 1997 Property/ Casualty Statistical Compilation.

In aggregate, 1997 was a good year for property/casualty insurance companies. Total assets grew 8.3 percent from 1996 to slightly more than $911 billion in 1997. The resulting surplus grew 18.6 percent from 1996 to slightly more than $326 billion. Finally net income increased over 48 percent from 1996 to over $38 billion.

Premium volume rose by about $523 million over 1996 to a level of around $294 billion in 1997. This premium growth was not, however, uniform across all lines of business. Multiple insurance (crop, homeowners and commercial non-liability) premiums increased, while traditional fire insurance premiums fell. Premium volume in accident and health lines generally rose. Auto liability and physical damage premiums, both private and commercial, rose while no fault premiums declined.

Worker's compensation premiums declined, as did burglary and theft and boiler and machinery. Earthquake premiums and medical malpractice premiums also fell in 1997, while credit insurance premiums rose.

Because of stability in loss adjustment expenses, an increase in premium growth, and a particularly quiet year for catastrophic events, the combined ratio (loss ratio + expense ratio + policyholder dividend ratio) fell to 101.9, its lowest level by far in the last five years.

Within the investment portfolio, no major differences from recent trends were evident. In aggregate, bonds constitute about 59 percent of the portfolio, with stocks constituting about 21 percent, real estate around 1 percent and mortgage loans around 0.2 percent. The maturity distribution of the bond portfolio remained in line with past experience, with over two thirds of the bond portfolio having maturities of 10 years or less. The risk distribution of the bond portfolio remained in line with past experience, being primarily held in low risk, SVO Class 1 and 2 securities.

Highlights from the 1997 Life/Health Statistical Compilation

In aggregate, life/health insurance companies also had a good year in 1997. Total assets grew by about 11 percent from 1996 to a level of $2.6 trillion dollars. Capital and surplus grew by almost 14 percent over 1996 to a level of almost $200 billion in 1997. Net income from operations grew by over $4.5 billion (or almost 24 percent) from 1996 to $23.8 billion in 1997.

Premium and annuity volume grew by almost $10 billion over 1996 to $257 billion in 1997, while deposit-type funds grew nearly $18 billion from 1996 to almost $150 billion in 1997. A profitable year in the securities markets caused an increase in net investment income of over $7 billion from 1996 to $133 billion in 1997.

Within the investment portfolio, bonds continued, as in the past, to be the primary assets class, representing over 48 percent of total assets. The maturity distribution of the bond portfolio remained the same as in the past, with around two thirds of the portfolio having maturities of 10 years or less. The industry continues to hold about 77 percent of the bond portfolio in publicly traded instruments and the remainder in privately held instruments. The risk distribution remains, as it has in the past, somewhat concentrated in lower risk, SVO Class 1 and 2 securities.

How to Order

To receive a copy of the *Statistical Compilation of Annual Statement Information* for property/casualty and life/health companies, contact the NAIC publications department through any of the methods listed below. Please note that state insurance department personnel may receive copies at no charge by contacting the NAIC Publications Department.

NAIC Publications Department
120 W. 12th Street, Suite 1100
Kansas City, MO 64105-1925
Telephone: (816) 374-7259
Fax: (816) 460-7593
Internet: http://www.naic.org

The Statistical Handbook Of Data Available To Insurance Regulators

by Natalai Webster Hughes (NAIC/SSO)

History and Background

The statutory foundation for statistical reporting stems from a long history, which began with the concept that certain market imperfections justified close public supervision of the insurance business. This supervision primarily took the form of: 1) solvency surveillance to help ensure that insurers can pay the losses they have promised to pay or have contracted and 2) rate regulation to help ensure that rates are not excessive, inadequate or unfairly discriminatory. In more recent years, rate regulatory functions have evolved to include more attention to the monitoring of markets and competition.

The New York State Merritt Committee Report of 1910 recommended that statistical data be combined as a means of facilitating the review of loss experience to monitor solvency and evaluate rates. In 1925, the U. S. Supreme Court upheld the concept that the exchange of cost and pricing information served the public good.

In 1944, the U. S. Supreme Court ruled in the Southeastern Underwriters Association case that the selling of insurance was commerce and, therefore, was governed by federal laws regulating interstate commerce. Specifically, the court applied federal antitrust laws to the business of insurance. The decision created uncertainty about the legality of all joint activities within the insurance industry.

The U.S. Congress recognized that the nature of insurance pricing made it necessary to combine premium and loss experience. This was especially important to companies that did not have access to a base of experience large enough to develop credible data on their own. In 1945, Congress passed the McCarran-Ferguson Act that provided certain antitrust exemptions for the business of insurance to the extent that the states regulated the business. In 1946, the NAIC adopted all-industry model rating laws (one for property and another for casualty) that established the regulation required by the McCarran-Ferguson Act. The NAIC model laws permitted joint action in collection and compilation of data. All states except California subsequently passed laws patterned after the NAIC model. The relevant language in the original NAIC model laws is shown below:

> The commissioner shall promulgate reasonable rules and statistical plans, reasonably adapted to each of the rating systems on file with him, which may be modified from time to time and which shall be used thereafter by each insurer in the recording and reporting of its loss and country-wide expense experience, in order that the experience of all insurers may be made available at least annually in such form and detail as may be necessary to aid him in determining whether rating systems comply with the standards set forth in section 3.

While the model laws and laws in individual states have changed since then, statutory requirements regarding statistical collection remain similar in most states.[1] The current Model Rating Law contains the following:

> The commissioner may promulgate reasonable rules to assure that the experience of all insurers is made available at least annually in such form and detail as is necessary to aid in determining whether rating systems comply with the standards set forth in Section 4. The commissioner may designate one or more advisory organizations or statistical agents to assist in gathering such experience and making compilations thereof, and such compilations shall be a public document.[2]

Drafting Note: *States that want the commissioner to be required to promulgate rules for the collection of statistical experience can replace the "may" in the first line of subsection B. with "shall".*

The statutes requiring data reporting generally apply to all property and casualty insurance companies. The NAIC has adopted the Model Regulation to Require Reporting of Statistical Data by Property and Casualty Insurance Companies for states use in administrating the data reporting process. A company must file statistics with state insurance departments either through a statistical agent or directly to the department. (Because only a few state insurance departments are equipped to process raw statistical data directly from insurers, the model regulation contemplates that regulators will customarily require the use of statistical agents.) Departments also have the authority to impose fines or suspend or revoke a company's license for failure to comply.

Regulatory Needs For Statistical Data

Insurance regulators use statistical data to evaluate the rates and rating structures used by insurers in a state. State laws give insurance regulators various responsibilities to oversee the operations of property/casualty insurers. Responsibilities most relevant to statistical collection include:

- to ensure that rates meet statutory standards, i.e., that they are not inadequate, excessive or unfairly discriminatory and
- to monitor market structure and performance and act if necessary to restore competition or remedy the problems caused by market failure.

Regulatory responsibilities generate needs for several types of data including financial and statistical. Both types of data flow from one source – the transactions conducted by property/casualty insurance companies. This information provides the basis for evaluating solvency, monitoring market trends and assessing the proper relationships between rates and coverages.

Property/casualty insurers are, therefore, required by laws and regulations to prepare extensive statistical and financial reports for state insurance departments to help them meet their regulatory responsibilities.

Insurance Pricing and The Need for Aggregate Data

Central to the analysis of insurance pricing is the availability of reliable data on losses versus corresponding premiums and exposures. As with all forms of statistical data analysis, larger and more consistent statistical samples have a greater probability of producing accurate predictions than smaller ones. Virtually no insurer has enough loss experience to produce a credible database for all aspects of its own pricing decisions. To improve statistical credibility, it is necessary that insurers'

[1] The current NAIC model and the laws in a number of states use "may" instead of "shall." In addition, the NAIC model and the laws of many states have been revised to be gender-neutral.

[2] The Statistical Task Force is currently developing an amendment to the current model law language regarding data disclosure. The subject of insurer data disclosure became significantly more controversial in 1998, with widely diverse opinions being discussed in several different NAIC groups and forums. A more complete discussion on that subject would be better served as a separate article in a future edition of the *NAIC Research Quarterly*.

data be combined into aggregate databases. To produce more reliable analyses of historic experience and predictions of future costs both insurers and regulators must commonly look to pooled data.

To carry out this collection and pooling, insurers and regulators customarily rely on statistical agents. As permitted under most state laws, regulators may designate one or more statistical agents to whom insurers must provide their premium and loss experience. These statistical organizations then combine similar information from many reporting companies and give the aggregate information to the states. These organizations are generally licensed in many states and can be examined by state regulators. (The laws of the states are not uniform on these points.)

The Role of Statistical Agents

Historically, statistical agents have developed detailed instructions called "statistical plans" that define the data elements (e.g., line of business, coverage, class, state, territory, premium, etc.) as well as the formats and time frames for company reporting.

These statistical plans instruct insurers on how to code and submit their premium and loss data to the statistical agent. Statistical agents continually review their statistical plans and modify them when necessary to conform with state reporting requirements and to correspond with rating structures and coverage programs in common use.

Some insurers and statistical agents have evolved their statistical plans into more sophisticated tools designed to accomplish the same results. Regulators and statistical agents recognize, however, that for effective review and analysis of highly technical statistical data received from different sources, it is extremely important that statistical plans and/or such other procedures result in data that can be meaningfully combined. For this reason, data from different insurers needs to conform to common data definitions. Standard definitions provide for stable and reliable databases and are, therefore, the basis of meaningful aggregated insurance data. In addition, standard coverage programs, where relevant, permit the collection of comparable statistics and help aggregate statistics to be a valid starting point for regulatory monitoring.

As the next section explains, the Statistical Task Force has adopted a uniform set of suggested minimum reporting requirements for all insurers. Statistical agents have subsequently designed their data collection procedures to ensure that they are able to at least meet these minimum requirements.

Development of the NAIC Statistical Handbook of Data Available to Insurance Regulators

The *NAIC Statistical Handbook of Data Available to Insurance Regulators* is a publication first prepared in 1976 by the NAIC Research Department, under the direction of the (then) NAIC Subcommittee on Statistical Data Compilation.

Interestingly, the handbook was first developed to *limit* the amount of information submitted to regulators which, at that time, was considered to be "far in excess of regulatory needs for information."[3] Departments were unable to handle the sheer volume of paper received, which discouraged effective review of what was happening in the marketplace.

The *Statistical handbook*, as it was simply titled, was therefore designed to provide "less detail in a convenient form, which more readily lends itself to providing an overview of statistical developments."[4] The Handbook has been updated several times since 1976 to keep pace with technological advances in the data collection field. Twenty years later, technology has enabled insurance data reporting, collection and storage to be processes by which greater amounts of detailed data can more quickly and easily be obtained, summarized, sorted and analyzed.

The NAIC Statistical Strategic Plan

[3] *The NAIC Statistical Handbook*, 1976 Section I--Introduction, p.1

[4] ibid.

In 1994, The NAIC formed the (EX) Special Committee on Statistical Information. At the time, despite the increasing use and application of computers, software applications, programming and related technical aspects of information systems development, insurance regulators and others were still expressing concerns over the inability of the reporting systems in place to provide regulators with useful data in a timely manner.

Uncertainty regarding data quality, lack of uniform collection and reporting methods, a seeming lack of responsiveness to regulator requests and now the *lack* of detailed information collected and reported in a "user-friendly" manner, were some of the observations made by insurance departments in response to queries on improvements needed in the system of statistical data reporting. The issue of insurance industry ownership of statistical agents and its implication on rate development was another serious concern.

It soon became evident that strategic planning would be the most efficient process for addressing these problems and concerns. Accordingly, the Special Committee was formed and charged its Statistical Task Force to develop a NAIC Statistical Strategic Plan. The Statistical Task Force, in turn appointed a Statistical Strategic Planning Working Group to focus solely on the development of the Statistical Strategic Plan.

After more than two years of discussions and input from insurance companies, statistical agents, consumer representatives and other interested parties, in national and interim meetings, a strategic plan for improving the statistical reporting and data collection system was developed.

In December 1996, the Working Group presented the Statistical Strategic Plan to the Task Force at the NAIC Winter National Meeting in Atlanta where it was adopted by both the Statistical Task Force and its parent, (EX) Special Committee on Statistical Information. Having completed its charge, (EX) Special Committee on Statistical Information was dissolved following the Atlanta meeting. The NAIC Statistical Strategic Plan was formally adopted by the entire NAIC in June 1997.

Many of the plan's recommendations require a considerable amount of committee work to implement or otherwise effect. As such, the plan first recommended that the Statistical Task Force become a standing, "technical" task force reporting to the NAIC Executive Committee. This recommendation was adopted in January 1997.

In June of that year, the Statistical Task Force formally adopted Procedures that called for it to report on specified personal lines matters to the Personal Lines (C) Committee and on specified commercial lines matters to the Commercial Lines (D) Committee[5] in recognition of the task force's significant work in both the personal and commercial lines.

When the strategic planning effort began, the handbook was generally used as a guide for insurance departments to use in specifying requests for compilations of data for analysis purposes. However, various interested persons and groups, in addition to regulators, presented ideas for changing the format and procedures for data collection and data reporting, and for adding to the handbook's lists of data elements to be collected. The intent now was to provide a *greater* level of information detail to regulators for analysis and to do so on a more timely basis.

Many of the initial ideas for sweeping changes in the system were limited by the time and cost constraints for implementation. Eventually it was decided to instead address the *manner* in which new data elements can be added and revisions to existing data elements can be made. Currently, the handbook includes data elements and collection and reporting instructions for 18 lines of property/casualty insurance. (See "Scope")

[5] Note: At the time this article was written, the Personal Lines (C) Committee and Commercial Lines (D) Committee were to be formally combined in January 1999. As such, the Statistical (Technical) Task Force has recommended that it be reconstituted as the Statistical (C) Task Force, a standing task force with the newly formed Property and Casualty Insurance (C) Committee as its parent. As this article will be published after that time, this author assumes that the recommendation will take place.

Financial Versus Statistical Data

The financial data that insurers must report focuses on quarterly or annual performance as well as current financial status. Regulators can use this financial data as a snapshot view of a financial picture that is both larger in scope and longer in duration. With this kind of information, regulators evaluate financial solvency and decide whether to take regulatory action to conserve an insurer's assets and protect the interests of policyholders.

By contrast, in most cases, calendar year financial snapshots do not provide the necessary match of premiums and losses for such an analysis. Statistical data address this and other information needs by providing the essential match of premiums and losses for comparable policies.

The requirements outlined in the *Statistical Handbook of Data Available to Insurance Regulators* pertain to the collection of statistical data only. Guidelines for financial data reporting appear in the NAIC *Annual Statement Instructions* and the NAIC *Accounting Practices and Procedures Manuals*.

Relation Of The Handbook To The NAIC Model Regulation To Require Reporting Of Statistical Data By Property And Casualty Insurance Companies

The reporting "requirements" contained in the handbook reflect the minimum statistical compilation and report formats recommended by the Statistical Task Force. (Many insurers and some statistical agents collect data in addition to these minimums. With minor exceptions, the handbook does not address such additional data collection.)

Under the strategic plan, it is envisioned that a state adopting the NAIC Model Regulation would effectively adopt the handbook as its minimum reporting requirements, except where a report or other specification is described as optional, or unless the context otherwise clearly states "the handbook's specifications are 'suggested' or 'descriptive' and are not required."

For states that have not or do not adopt the model, the handbook is intended to serve as a valuable reference that is generally consistent with minimum data collection practices by insurers and statistical agents. It should be emphasized, however, that without some sort of regulatory requirement adopted by individual states, there is no assurance that insurers and statistical agents are compiling data in accordance with the suggested requirements described herein.

The handbook also provides reporting requirements for "optional reports" and state "special calls" for insurance data to encourage the standardization of state requests for such reports. This reduces costs for insurers and statistical agents in reporting and collecting this type of data for multiple states. Further discussion on special calls appears later in this article.

Confidentiality of Statistical Data

Nothing in the handbook is intended to imply that states either must disclose statistical reports and data or hold them confidential. Such determinations are made under individual state data reporting, public record and/or trade secret laws. In addition, if data identifies individual policyholders or claimants, it is possible that state privacy laws may apply as well.

Scope

The handbook's scope is limited to the statistical data available from statistical agents serving the primary property/casualty insurance industry for the following lines of insurance:

- General Liability
- Private Passenger Automobile
- Commercial Automobile
- Homeowners and Mobile Homes
- Dwelling Fire and Allied Lines
- Commercial/Farm Fire and Allied Lines
- Inland Marine
- Businessowners
- Burglary and Theft
- Glass
- Farmowners
- Boiler and Machinery
- Medical Professional Liability
- Comprehensive Personal Liability

- Aircraft
- Crop (except multiple peril crop insurance reinsured by the Federal Crop Insurance Corporation)
- Fidelity and Surety
- Mortgage Guaranty
- Financial Guaranty (Municipal Bonds)
- Workers' Compensation

Information on the various lines of business contained in divisible premium package policies, such as the Commercial Multiple Peril (CMP) policy, can be found in the individual section for each line of business (General Liability, Commercial Fire, etc.).

Role and Responsibility of the Statistical Task Force

The Statistical Task Force, through its Statistical Handbook Working Group is responsible for the content and maintenance of the handbook. The recommendations contained in the strategic plan will require an extensive amount of committee work to put into place.

Since its appointment in 1997, the Statistical Handbook Working Group has worked diligently to revise and update the handbook according to the recommendations of the plan. Specifically the working group is in the process of obtaining industry and statistical agent input to develop Insurer and Statistical Agent Data Quality Standards as well as Standards for Statistical Agent Edits. Toward this end, it also has consulted and met with members of the Insurance Data Management Association[6] for their professional input.

Various sections of the handbook will be updated or revised based on recommendations in the Plan. The Statistical Handbook Working Group is currently revising the Personal Auto Insurance section with intent to improve the ability of insurance companies, statistical agents and advisory groups to collect and report auto insurance statistics and to improve regulators' ability to use that data to monitor the market. The changes made in the Personal Auto section will form the basis of changes to sections dealing with similar lines of coverage such as Homeowners Insurance. Sections on General Liability, and Workers' Compensation will also be revised.

[6] An industry trade association that provides education and training for data managers and others who work with insurance statistical information.

Special Calls Technical Advisory Group

The Statistical Task Force has appointed a Special Calls Technical Advisory Group of volunteers consisting of insurers, statistical agents and other interested persons to assist in the development of a handbook section on Special Data Calls. The section is intended to offer standard formats and specifications for insurance departments to make requests for data and/or compilations of data, for a specific purpose, on a one time (special) or infrequent basis.

The advisory group has already developed reporting instructions and formats for catastrophe "special calls" and the Statistical Task Force expects to add additional optional report formats for states to use in other special call situations. In addition to reducing time and expense of special calls, the standard call format can provide a uniform basis upon which other states can request similar data. This also allows for more meaningful analysis when data is combined from various sources.

The Special Calls Technical Advisory Group is also working to identify outdated special calls and long-standing special calls for which a department may no longer have a need to receive the data. State insurance departments can use this information to review administrative rules or statutory requirement to determine the necessity of continuing to receive the data.

Lastly, the advisory group is available to work *directly* with department staff to develop special call requests. States are encouraged to contact the Statistical Task Force when a need arises for a special data call.

How to Order the Statistical Handbook

The Statistical Handbook of Data for Insurance Regulators is available at no charge to insurance

departments and their staff members. Copies can be obtained from:

NAIC Publications Department
120 W. 12th Street, Suite 1100
Kansas City, MO 64105-1925
Telephone: (816) 374-7259
Fax: (816) 460-7593
Internet: http://www.naic.org

The task force will update the handbook regularly and monitor the data definitions, quality standards and reports described in the handbook to assure that they respond to changes in technology and regulatory needs. The Task Force encourages all state regulators and other interested parties to suggest any changes, additions and deletions to improve its usefulness. Please direct any questions or comments about the contents to Natalai Webster Hughes at the NAIC (e-mail nhughes@naic.org).

Defining an Insurance Market: Some International and U. S. Comparisons

by Eric Nordman and Ray Spudeck (NAIC/SSO)

Current discussion within the insurance industry is replete with references to globalization of insurance markets and the frenzied pace of merger and acquisition among domestic and international insurers. Certainly, international access to insurance is facilitated by these combinations along with advances in Internet and other electronic communication technologies. At the same time, there is much discussion here at home about the current system of state regulation and the perception that this form of regulation puts domestic insurers at a competitive disadvantage in the global marketplace.

Discussion of insurance markets almost inevitably devolves to comparing the size of markets as defined by the country's geographical boundaries. Table 1, for instance, shows the relative size of the 10 largest insurance markets on the planet when a country's sovereign borders define the market. Clearly the United States is by far the largest "country" market for insurance, followed by Japan, with Germany, the United Kingdom and France distantly rounding out the top five. While segregating markets by national borders can be instructive for some purposes, it may be somewhat misleading for others. Rather than thinking in terms of national boundaries, another way to define markets is by regional boundaries. In this article we will disaggregate the United States' $748 billion[1] insurance industry into state level markets to see how important the individual states are when compared to insurance markets internationally.

Table 2 shows the results of this disaggregation by ranking insurance market size, as measured by premium volume, for the various states along with other sovereign nations. Interestingly, four states (New York, California, Texas and Florida), when considered as independent insurance markets, rank among the top 10 insurance markets globally. Further, individual state markets constitute more than 60 percent of the 50 largest insurance markets globally. Clearly, there is good reason to suspect that insurers would be attracted to these markets, regardless of who is charged with their regulation. Insurers will still be competing in the fourth largest market on the planet, whether it is New York or some other area regardless of who is in charge of setting the rules of the game.

When placed in this context, the notion of who regulates seems to be subsumed by the prospect of growth and profitable business opportunities. As Table 3 suggests, North America, Europe and Asia consume 95.7 percent of the world's insurance products by premium. As advances in markets and infrastructure continue, the primary search among insurers will be for markets that are currently underserved and provide profitable opportunities. Certainly, Eastern and Central European regions are growing, along with Latin America, Africa and the People's Republic of China.

Another interesting way to examine these markets is by affiliated economic regions. Table 4 shows how the insurance markets look when segregated along these lines. As the data suggest, the NAFTA member nations comprise the largest affiliated economic region insurance market,

[1] The 1996 premium volume in the United States was $747,984,214,001. Source: *NAIC Insurance Department Resources Report 1996.*

followed by the European Union and then closely by the Far East Asian nations. Of course, these rankings are largely driven by the U. S. dominance in the global insurance market. Results such as these show how insurance market size can be distorted by the choice of geographic or demographic boundaries.

Clearly, there are forces at work in the global marketplace that are more significant than who has been selected to regulate the markets. Comparisons of market size on a global basis may make more sense if the markets are defined by more carefully controlled geographic distinctions. From the data presented here, the use of state boundaries is probably one of those geographic distinctions. While these data suggest that market size and opportunity may be more important than who regulates the market, it is still incumbent on the regulator, be it states or national governments, to make that regulation as efficient as possible. This is, ultimately, in the best interests of the consuming public.

Table 1[2]
Largest Sovereign Nation Insurance Markets

RANK	INSURANCE JURISDICTION	PREMIUM VOLUME ($U.S. MILLIONS)	RANK	INSURANCE JURISDICTION	PREMIUM VOLUME ($U.S. MILLIONS)
1	United States	$747,984	6	South Korea	$62,470
2	Japan	$519,589	7	Italy	$43,911
3	Germany	$152,218	8	Canada	$36,196
4	United Kingdom	$137,061	9	Netherlands	$36,139
5	France	$136,841	10	Australia	$33,103

[2] All data and information obtained from the NAIC Insurance Department Resources Report 1996 & SwissRe Sigma No. 4/1998.

Table 2
Largest Disaggregated Insurance Markets

RANK	INSURANCE JURISDICTION	PREMIUM VOLUME ($U.S. MILLIONS)	RANK	INSURANCE JURISDICTION	PREMIUM VOLUME ($U.S. MILLIONS)
1	Japan	$519,589	26	Virginia	$16,020
2	Germany	$152,218	27	Taiwan	$15,827
3	United Kingdom	$137,061	28	Washington	$15,822
4	France	$136,841	29	Wisconsin	$15,365
5	New York	$71,390	30	Belgium	$15,323
6	California	$66,702	31	Brazil	$15,029
7	South Korea	$62,470	32	Missouri	$14,742
8	Texas	$48,685	33	Connecticut	$14,621
9	Florida	$44,079	34	Maryland	$14,234
10	Italy	$43,911	35	Minnesota	$14,129
11	Illinois	$39,923	36	Austria	$13,608
12	Canada	$36,196	37	Tennessee	$13,536
13	Netherlands	$36,139	38	Sweden	$13,057
14	Australia	$33,103	39	Colorado	$12,379
15	Switzerland	$32,994	40	Arizona	$11,721
16	Michigan	$30,502	41	Denmark	$11,118
17	Spain	$30,200	42	Alabama	$10,579
18	New Jersey	$29,959	43	Louisiana	$10,106
19	Ohio	$29,487	44	Finland	$10,105
20	Pennsylvania*	$28,016	45	P R China	$9,622
21	Massachusetts	$26,389	46	Oregon	$9,315
22	Georgia	$19,951	47	Iowa	$8,289
23	South Africa	$19,578	48	Kentucky	$8,188
24	North Carolina	$17,769	49	South Carolina	$7,807
25	Indiana	$16,199	50	Kansas	$6,615

* Pennsylvania premium volume does not include HMO and HMDI premiums.

Table 3
Largest Regional Insurance Markets

RANK	INSURANCE REGION	PREMIUM VOLUME ($U.S. MILLIONS)	RANK	INSURANCE REGION	PREMIUM VOLUME ($U.S. MILLIONS)
1	North America	$784,179	4	Oceania	$37,187
2	Europe	$674,737	5	Latin America	$32,913
3	Asia	$647,060	6	Africa	$24,755

Table 4
Insurance Markets by Affiliated Economic Regions

NAFTA Nations	Premium Volume
United States	747984
Canada	36196
Mexico	4097
Total	$788,277

Eastern Asia	
Japan	519,589
South Korea	62,470
Taiwan	15,827
P R China	9,622
Malaysia	4,631
Thailand	4,586
Total	$616,725

European Union Members	Premium volume
Germany	152,218
United Kingdom	137,061
France	136,841
Italy	43,911
Netherlands	36,139
Spain	30,200
Belgium	15,323
Austria	13,608
Sweden	13,057
Denmark	11,118
Finland	10,105
Ireland	6,946
Portugal	6,048
Luxembourg	3,914
Greece	2,082
Total	$618,571

NAIC Education & Training Department

March through July 1999

Regulator-Only Programs

(all held in Kansas City, MO)

AUTOMATING THE EXAMINATION PROCESS
March 15-17

COMMISSIONERS EDUCATION
April 12-16

REGULATING THE MARKETPLACE
April 26-29

Staff **E**ducation
May 10-13

Advanced **C**ommissioners **E**ducation **P**rogram
July 19-20

Public Programs

REINSURANCE SEMINAR
March 22-24, San Diego

MANAGED CARE: WHAT'S BEHIND THE RHETORIC?
March 25-26, Washington, D.C.

THE "HOW-TO" OF FILING SECURITIES WITH THE SVO
March 29-30, Kansas City, MO

Life/**H**ealth **A**ctuary **S**eminar
April 8-9, Kansas City, MO

Annual **S**tatement **C**hanges **S**eminar
May 24-25, Indianapolis

Alternatives for **A**ddressing **C**atastrophe **R**isk
June 21-22, Atlanta

Annual **S**tatement **I**nvestment **S**chedules **S**eminar
June 23, Atlanta

HMO Annual **S**tatement **P**reparation **W**orkshop
July 12-15, Indianapolis

For more information on any of the programs listed above or to receive a 1999 program catalog, contact the NAIC Education and Training Department at 816-374-7192 (phone) or etrainin@naic.org (e-mail).

Recent NAIC Publications

1. Annual Statement Instructions for filing 1998 annual statements and 1999 quarterly statements (Call to order specific lines of insurance)

2. 1998 Annual Statement Blanks and 1999 Quarterly Blanks (Call to order specific lines of insurance)

3. Long-Term Care Insurance Experience Reports (#LTC-LR)

4. Credit Life and Accident and Health Insurance Loss Ratios (#CRE-LB)

5. Credit Life and Accident and Health Experience by State (#CRE-LO)

6. Credit Reports and Insurance Underwriting White Paper (#CRU-OM)

7. Insurers' Distribution of Assets (#IDA-BU)

8. Insurers' Medium and Lower Quality Bond Holdings (#IML-ZU)

9. Insurers' Long-Term Mortgage Loan and Real Estate Investments (#MTR-PU)

10. IRIS Ratio Results (#IRS-ZM)

11. Listing of Companies (#LOC-ZM)

12. Market Share Report for Property/Casualty (#MSR-PB)

13. Market Share Report for Life (#MSR-LB)

14. Medicare Supplement Loss Ratios Report (#MED-BB)

15. Guide to Compliance With State Audit Requirements (#CPA-ZM)

16. Insurance Availability & Affordability Task Force Final Report (#IAA-PB)

17. Statistical Compilation of Annual Statement Information for Life/Health Insurance Companies (#STA-LS)

18. Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies (#STA-PS)

19. Statistical Compilation and Market Share Reports for Accident and Health Insurance Companies (#STA-HB)

20. Compilation of Minutes (#CMP-ZS)

21. Proceedings of the NAIC (#PRC-ZS)

22. NAIC News (#NEW-ZS)

23. Quarterly Listing of Alien Insurers (#QLY-AS) Quarterly Listing Supplement (#QLS-AS)

24. Using the NAIC Insurance Regulatory Information System (Call to order specific lines of insurance)

25. Federalism and Insurance Regulation: Basic Source Materials (#FIR-ZB)

26. Compendium of State Laws on Insurance Topics (#CSL-ZM)

27. State Average Expenditures & Premiums for Personal Automobile Insurance (#AUS-PB)

28. Retaliation: A Guide to State Retaliatory Taxes, Fees, Deposits and Other Requirements (#RET-ZM)

29. Marketing Insurance Over the Internet (#MOI-OP)

30. Sales and Marketing Practices, Auditing and Accounting Procedures and Products of Insurers Utilizing the Home Service System (#HSR-PB)

31. Profitability By Line By State (#PBL-PB)

To order, contact the NAIC Publications Department
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