Evaluating Reserves in a Changing Claims Environment

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Abstract
Recent insurance industry emphasis on claims "best-practices" requires the reserving actuary to identify and measure the emerging effects of Claims Department initiatives. Several of these initiatives will be reviewed from both an actuarial and claims personnel perspective. Adjustments to generally accepted actuarial methodologies as well as potential metrics to measure the impact of these initiatives will be presented.

Evaluating Reserves in a Changing Claims Environment

Section 1 – Introduction

Insurers are regularly reviewing their claims handling procedures to identify areas for improving this vital function. This activity intensified during the 1990's with a number of insurers introducing focused initiatives to reengineer their claims processes. While it is difficult to pinpoint the drivers behind these actions for individual insurers, our experience has shown that this trend can generally be attributed to a number of factors:

- Improvements in cellular and mobile technology have enabled carriers to accelerate the recognition and adjustment of claims. Advanced intelligence or "smart" systems allow claim adjusters to evaluate the settlement value of claims more quickly as well;

- Competitive cost pressures have forced insurers to identify the "fair value" of claims and to take all necessary actions to settle claims expeditiously and control their claim costs. Loss adjustment costs have also received considerable attention, and innovative alternative contractual arrangements and other strategies have been developed to reduce LAE expenses without jeopardizing control on losses;

- Companies have invested heavily to develop fraud detection systems. Claims suspected to be fraudulent or claim demands that seem inconsistent with available information are tagged and specific strategies are developed to address them.

These initiatives have commonly changed the ways in which claims are reported, recognized, and settled and have therefore introduced significant distortions into the historical actuarial data used

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for reserving. Several CAS papers have been written to address situations in which changes in claims handling procedures have to be recognized in the reserving process. Methodologies commonly "adjust" the historical data to simulate what the experience would have looked like in the new claims handling environment.

However, these papers have generally focused on changes in case reserve adequacy and the rate at which claims are closed. More complex changes of the variety noted above have received less attention. For example, what if the strategies introduced to handle suit claims are considerably different than the strategy to handle claims suspected to be fraudulent? What if entirely new contracts are drawn up to compensate outside attorneys on a fixed fee basis? Such changes require more elaborate refinement of standard actuarial approaches to evaluate reserves appropriately.

This paper will focus on several specific claims initiatives and the actuarial methodologies we have utilized in situations where these initiatives have distorted the historical database. Section 2 provides a detailed description of illustrative operational changes. Section 3 examines why these changes can have a distortive effect on the actuarial reserving data. Finally, Section 4 provides examples of the actuarial methods that can be adapted for these changes. Section 4 also highlights some of the additional uncertainty that is introduced into the reserving process as a result of these changes.

Section 2 – The Changing Claims Environment

Reengineering was a commonly touted initiative of many business practices during the 1990's. The process of reengineering starts with a disciplined dissection of business procedures to reveal and isolate base underlying elements of the targeted process. This is followed by an equally disciplined examination toward optimizing the treatment and handling of these base elements. Varying degrees of such reengineering efforts were employed throughout the business world. The casualty claims environment was no exception. The implementation and success of these reengineering efforts varied throughout the business world. Again, the casualty claims environment was no exception. The ability to track and monitor the results of reengineering efforts can prove very difficult. This was, and is, especially true of the casualty claims environment. The reserving professional is severely challenged in identifying, understanding and quantifying the impacts of these changes on both loss and claim expense development patterns.

Internal changes in the Claims environment are tied closely to this approach of dissection and optimization. Dissection, in this case, is the heightened awareness and recognition of the differences in casualty claims. In a macro sense, the reserving professional has historically recognized the importance of segmenting, for example, the loss statistics of bodily injury, uninsured motorist, underinsured motorist, and personal injury claims. There has also been common recognition of different loss and expense development patterns between tort and no-fault states. Internal reengineering efforts have identified additional layers of segmentation: subjective injury versus objective injury; attorney representation versus non-representation; claims "in-suit" versus non-suit; low-impact subjective injuries; "express" (low severity) claims; and suspected fraudulent claims. The identification and comprehension of these subsets of casualty claims has naturally led to multiple sets of "best practice" protocols that govern their disposition. In addition, many insurance companies have taken the natural progression toward enhanced claim-

type segmentation by introducing specialization to the structure of their Claims organizations. Individuals are trained to handle each of these specialized sets of claims. The combination of specialization and "best practice" protocols are essentially the second piece of the reengineering process, optimization.

The extent to which Claims operations have been able to refine this concept of dissection and optimization is directly correlated to advances in technology. Technology should be viewed as the prime enabler of the intensified differentiation in casualty claims handling. Cellular and mobile technology has enabled faster adjustment of claims. Database technology has enabled desktop access to extreme quantities of claim information that can be parsed down to specific components. In turn, this component information is used to compile different, more detailed, operational analytics for monitoring claims performance. Advanced intelligence claims systems are an ever-broadening tool in the area of liability determination and damages evaluation. Databases and intelligence systems are also the cornerstones of fraud detection strategies.

As mentioned above, many carriers have enacted significant changes in the structure of their Claims operations. In most cases, specialization has become the norm. Claim teams have been formed to align with the different segments. The goals, or benchmarks, of each team are aligned with the "best practices" protocols that govern the optimal disposition of that segment's claims. Accountability and performance measurement becomes more localized, per se. For instance, an "express" unit would handle claims that fall below a pre-determined dollar threshold, have little or no cause for liability and damage investigation, and have low probability of fraud. The accountability of this unit is most likely to center on low pending levels and high customer satisfaction. Cost control measures would be secondary given the low-severity trigger that already defines claims within this segment. Traditional actuarial claim statistics are potentially impacted by the accelerated disposition of low severity claims, a different composition of the

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remaining pending claims, and a different age-to-age paid loss development pattern. There is also the possibility of a decrease in the ratio of claims closed without payment due to the non-investigation protocol of this particular unit.

As a contrast, consider the accountabilities and performance measures for claim adjustment personnel dedicated to claims alleging subjective, soft-tissue injuries from incidental automobile contact. Even though these claims are also of the lower severity variety, there would likely be a greater appetite for rigorous arguments against the merits of these claims. In fact, there would be operational modifications in the end-to-end handling of claims within this segment: clear-cut selection criteria for identification of appropriate claims; stronger investigation and verification of damages; more consistent and objective evaluations of liability and damages; elevated preparedness for potential negotiations; increased willingness to try all cases where settlement cannot be reached; and flexibility in settlement methods. The expected actuarial impacts would be delayed pending disposition, increased allocated defense costs, increases in the ultimate percentage of denials, and lower average paid losses on those claims settled with payment. However, a long-term result could possibly be the elimination of these claims altogether.

Another good example of internal claim initiatives and the corresponding impact on actuarial analysis is the issue of contact time and litigation avoidance. The over-arching operational goal of a Claim department is the fair and timely resolution of all claims. Competitive cost pressures have forced insurers to take all necessary actions to settle claims expeditiously and control their claim costs. Paramount to the attainment of these objectives is the claim adjusters' ability to establish good rapport with the claimant. Operational activities expected to help drive the desired results would include:

- rapid initial contact to educate the claimant on the insurer's approach to fair claim settlement;

- anticipation and resolution of a broad range of claimant needs in a genuine and empathetic manner,

- rapid liability investigation and amicable resolution of property damage issues,

- reduction of unnecessary claimant and file transfers between claims personnel,

- regular follow-up claimant contact, and appropriate settlement offers.

All in all, it is a continuous process of relationship building interactions. The critical measures of success in this area would be contact time (average time elapsed between date of report and date the claimant is first contacted) and attorney representation rates (percentage of third party claimants represented by an attorney). The potential statistical impacts would entail: acceleration of claim notice counts, faster settlements, change in pending disposition trends, reduction in expected ultimate loss costs, and reduction in allocated legal expenses.

"Smart" claims systems, are a prime area where computing technology has enabled casualty insurers to enhance their objectivity, consistency, and negotiation strategies in the course of evaluating and settling claims. There are three key elements to this process: 1) strengthened file investigation and development; 2) objective/consistent value calculation methodology; and 3) verdict database. The strengthened file investigation is merely the execution of structured "best practices". This would include items such as liability assessments, documentation of relevant findings, structured diagnostic analysis, and structured investigation guidelines. The objective/consistent valuation process would begin with a comprehensive breakdown of claim value components. A historical database of such components would serve as a baseline for subsequent damage evaluations. In addition, a checklist of subjective factors would help ensure proper consideration is given other variables in the evaluation process. Lastly, a verdict database

provides a factual understanding of attorney economics within various geographic markets. Combining these three elements produces a "smart" system that attempts to introduce consistency and objectivity within the claim evaluation process.

How, then, would such "smart" systems impact the actuarial analysis of the reserving professional? Objectivity and consistency in the liability determination and damage evaluation processes should lead to a higher level of confidence that proper claims adjusting has taken place. This would then lead to earlier settlement offers, regardless of the dollar amount involved. It is quite possible, then, to see acceleration in the settlement of higher severity objective-injury type claims.

In contrast, "smart" systems may permit insurance carriers to take a tougher negotiating stance on lower-severity, subjective claims. Insurers are more and more willing to let these claims pend longer than before, armed with the belief that their settlement offer is fair and reasonable. The fact that a slight increase in the offer at the negotiation table could bring about closure becomes less material.

"Smart" systems have also provided the tool for effective and efficient data mining of claim detail to identify areas and individuals with suspected fraudulent activity. This is one more area where insurers are putting additional focus of loss cost containment processes. Statistically, the insurer utilizing "smart" systems would likely exhibit an increase in pending claim counts for lower-severity subjective claims, an increase in the ratio of claims closed without payment, an increase in loss adjustment expenses, and a decrease in average losses paid.

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One final area of change in the internal Claims environment that is worth discussion is the relatively recent attention being paid to the control of claim expenses, and in particular, legal costs.

For many carriers, legal fees contribute 50% to 70% of their overall allocated claim expenditures. During the 1990's, the trend in average legal claim expenses far outpaced liability severity trends for most coverages. It is only natural then for companies to seek approaches that enable them to control these costs.

A recent survey of corporate attorneys outside of the insurance industry echoed similar sentiment:

> "The costs of litigation are rising ... a new business model will be mandated for
> corporate legal departments, which must operate more efficiently to counter
> rising litigation costs and bottom-line pressures(.)"[1]

In controlling costs, the corporate insurance attorneys pointed to:
- closely monitoring bills, billing audits and budgets;
- early settlement, discussions/faster case settlement;
- reducing outside (attorney) costs;
- handling cases in-house.

These approaches are not unique. In fact they are very much like the legal expense cost containment initiatives commonly found within the insurance industry.

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[1] KPMG LLP, "Litigation Survey" September 2000

Companies seeking to gain control over their legal expenses may begin with a review of their authorized outside or "panel" attorney firms. Consolidating the number of authorized firms permits the company to negotiate from a stronger position in that they are offering the remaining firms a larger number of potential cases. Web-based auction sites for legal services have also increased the purchasing power of insurance companies, requiring the attorneys to, in essence, compete for business.

Alternative fee arrangements between panel firms and insurance companies have also become quite common, and offer still another complication for the actuary. Flat fee agreements typically compensate the attorney a fixed amount based upon the type and complexity of the case. The timing and amount of the payments will generally follow a set schedule regardless of the actual time commitment of the attorney. Often, the panel firm and the company will agree to a set listing or "matrix" of payments covering a range of possible claim types.

Retainer agreements are another form of alternative fee arrangements in which a fixed amount is paid to the firm to handle a group of claims until their conclusion. In essence, the ultimate legal expense cost on these claims is limited to the retainer fee. In situations where the retainer is exhausted, the attorney remains responsible for servicing the claim.

Other alternative legal fee arrangements include:
Reverse Contingency Fee: additional sums paid to the attorney by the insurance company depending upon settlement outcome.
Shared Savings: defense attorney paid a percentage of savings below reserve/settlement value.
Bonus for Prompt Disposition: additional sum paid for speedy resolution.

Internally, companies are also changing the way they pursue litigation and litigation costs. Many claim organizations now employ formal litigation guidelines which detail their preferred approach to handling claims in suit. These guidelines have been established in order to promote consistency in legal philosophy. Companies have also begun to utilize alternative dispute resolution or ADR as a means for settling claims while reducing legal fees.

Companies have also increased the utilization of staff attorneys as an alternative to more expensive panel firms. Staff counsel attorneys often have the right of first refusal on handling suits, although there may be situations were they are precluded from servicing a case due to a conflict of interest.

From a statistical perspective, each of the legal expense cost containment initiatives can have a significant impact on the both the actuary's data and their expense reserve methodologies. For example, the introduction of flat fee or retainer agreements may produce an apparent acceleration in legal cost expenditures as up-front expenses are paid. However, over time, these alternative fee arrangements should produce less legal expense development than existed for previous accident years.

Section 3 – Actuarial Implications of The Changing Claims Environment

As evident in Section 2, the recent and rapid introduction of significant changes in the casualty claims environment has required the reserving actuary to become far more conversant in the "language" of claims then ever before. No longer can the actuary rely upon anecdotal descriptions of general changes in claims handling philosophy. Instead, the actuary must seek to fully understand the anticipated effects and interactions of the claims initiatives in order to accurately reflect them in the reserve analysis. In this section, we will further investigate many of the significant changes impacting the Claims environment, as well as discuss many of the potential actuarial implications resulting from these changes. Particular emphasis will be paid to translating "claims-speak" to actuarial jargon.

Historically, conversations between the actuary and the claims department occurred when the actuary sought explanations for unusual claim development. Armed with the response from the Claims Vice President that *"we're settling claims faster, and case reserves are better "*, the actuary went back to their office to adjust their triangles for settlement speed-up, and perhaps for reserve strengthening.

The complex interaction between individual claim initiatives, as well as between the initiatives and actuarial statistics no longer permits this type of limited actuarial involvement. Further, from a financial management perspective, the costs incurred in implementing these changes necessitate a more careful evaluation of their success (or failure). To illustrate this point, we will examine the following changes to the Claims environment, and discuss alternative actuarial approaches to evaluate reserves in each of these environments:

- Changes to Settlement Rates that Vary by Type of Claim

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- Changes to the Mix of Claims Settled

- Interaction of Internal Initiatives and External Influences

- Changes to Claim Expense Philosophy

A. *Changes to Settlement Rates that Vary by Type of Claim*

A typical discussion with the claims professionals of a multi-line company might reveal several of the following initiatives. Each of these initiatives will potentially have various degrees of impact on the overall settlement rate (and perhaps, reporting pattern) of claims.

1. *Formation of a Minor Injury Unit*

Commonly referred to as MIST (Minor Injury Soft Tissue) or LIST (Low Impact Soft Tissue) claims, the emphasis of this initiative is on reducing improper bodily injury payments on accidents where there is a minimal amount of physical damage to the vehicle.

Several carriers have taken a much harder-line with claimants and their attorneys when the physical facts of the accident do not support the possibility of a bodily injury. As a result, the actuary may expect an initial slow-down in the settlement of these claims, coupled with a reduction in overall severity. However, these observations may change as the program matures. Depending upon the success of the program, claimants and their attorneys may become hesitant to file such claims, which could have a further impact on the overall disposal rate of claims.

2. *Introduction of a Contact Time Requirement*

It has become a common best practice of claims departments to seek contact with all first-party and potential third-party claimants within a day or two. This rapid contact serves several purposes. First, for the simpler claim, it encourages a quicker settlement. Second, by quickly establishing lines of communication between the carrier and the claimant, the potential of a

lawsuit being filed appears to be reduced. Finally, beginning the fact-finding portion of the claim adjustment process earlier can lead to faster identification of all loss exposures, and more accurate case reserving.

3. Increased Claim Staffing

While changes in claim staffing levels should directly impact the settlement rate of claims, it is important to understand how the staffing of the department is configured as well as the responsibilities of the adjusters. For example, increasing the number of property claim adjusters should, at its surface, have a minimal impact on the settlement of more costly and complex liability claims. However, segmentation of responsibilities by claim type may allow senior claim adjusters to spend a greater percentage of their time handling complex claims. As a result, a reduction in bodily injury pending rates may be experienced.

4. Implementation of an Expert Claims Evaluation System

Among the more controversial of initiatives, several carriers are utilizing expert claim systems to assist in evaluating a range of reasonable settlement values for a claim. Typically, these systems require the capturing of specific data elements concerning the injury, possibly lengthening the settlement process. However, as previously discussed, the use of these systems can lead to more rapid settlement of higher severity objective-type injuries.

5. Use of alternative dispute resolution ("ADR")

In an effort to close claims more rapidly as well as reduce legal expenditures, companies have increasingly utilized alternative dispute mechanisms. These may include on-line settlement sites as well as traditional ADR with an impartial third-party. Each of these mechanisms will exert a change on a particular group of claims, emphasizing the need for the actuary to not only understand the approach, but to also identify the impacted claims in their reserving database.

Clearly, a review of settlements rates for all claims combined will fail to uncover the subtle shifts that have occurred for subsets of the population. Only a detailed discussion with claims operational professionals will identify possible ways to segment the data and test for shifts in the settlement patterns for each segment.

B. Changes to the Mix of Claims Settled

The migration towards specialization within the claims department has fostered an environment in which the concept of a universal claims handling philosophy is no longer applicable. In its place we now find a series of approaches, each tailored to a specific subset of claims.

For example, it would not be uncommon for there to be an emphasis on more rapid settlement of severe claims on which both the liability and damages are reasonably determinable. At the same time, the Company may choose to hold fast on minor claims on which the liability is questionable. Further, the Company may employ different settlement philosophies based on whether the claimant has legal representation.

Specialization has also led to the development of subject matter experts within the claims department. Where historically, you might find personal lines adjusters handling a wide variety of claim types, specialization has permitted experienced adjusters to focus more of their time on complex claim issues.

From an actuarial perspective, changing settlement philosophies by claim type require the actuary to question many of the traditional diagnostics they historically have relied upon. For example, one of the underlying premises of the Berquist – Sherman[2] adjustment for changing settlement

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[2] Berquist, J.R. and Sherman, R.E., "Loss Reserve Adequacy Testing: A Comprehensive, Systematic Approach", PCAS, Vol. CXIV, 1997, Pg. 123-184

rates is that of an increasing incremental paid severity. Stated more simply, larger claims will generally settle later than smaller claims. However, as mentioned above, it is not unusual to observe an acceleration in the payment of a segment of larger claims, coupled with a delay in the closing of smaller claims. If this change in settlement philosophy results in an overall settlement speed-up across all claims, the traditional Berquist-Sherman methodology may lead to an overstated ultimate loss indication when applied to the un-segmented data.

Conversely, the actuary must also be aware of situations in which an overall settlement acceleration is driven mainly by "cherry-picking" or an increased emphasis on the settlement of small, relatively insignificant claims.

C. Interaction of Internal Initiatives and External Influences

Throughout most of the mid to late 1990's the personal automobile insurance industry was the beneficiary of favorable trends in bodily injury claim costs. Not surprisingly, these favorable trends overlapped with the introduction of many of the claim initiatives previously discussed. During this same time period, the insurance industry also benefited from the positive influence of several external or "environmental" cost drivers. A few of these external trends included:

- Reductions in annual medical inflation rates
- Increased use of seat belts
- Increased use of airbags, and other safety features
- Decreases in the use of alcohol / DWI convictions
- Increases in average car size
- Proportional reduction in youthful drivers

It is reasonable to believe that the improvement in results many companies experienced was a function of both internal claim initiatives and these external influences as well. This combination of factors poses additional challenges to the actuary in both the interpretation and projection of historical claim information.

When faced with numerous options for changes within the claims organization, the actuary may also be called upon to evaluate the potential benefit of one initiative versus another. As many of these initiatives require significant upheaval to personnel and systems, the ability to segment the impact of various initiatives becomes critical. Companies benefiting from favorable environmental conditions may also question whether or the not the incremental value received from internal changes offsets the actual cost of those changes.

D. Changes to Claim Expense Philosophy

The myriad of claims department initiatives has not been limited to only the indemnity portion of the claim. Numerous programs have been developed targeting expenses, primarily legal costs.

At their core, most of the recently implemented legal expense cost containment initiatives seek earlier recognition and payment of legal costs, ultimately leading to reduced overall expenditures. If successful, these initiatives should generally result in truncated expense cost development (relative to historical averages). For example, a successful fixed fee or retainer program should reduce the future legal expenditures on the covered claims in exchange for a guaranteed up-front cost. However, traditional development approaches may tend to overstate ultimate legal costs due to this front-loading of expenses.

Agreements between claim departments and outside panel firms may also impact the timing of expense payments. A movement from end of case billing to quarterly or monthly invoicing could

easily be misinterpreted as a deterioration in ultimate expense costs. Likewise, a shift to end of case billing may result in understated expense ultimates utilizing traditional paid expense development techniques.

The actuary must also be aware of the potential distorting effects of a shift from outside legal (or "panel" firms) to internal staff counsel positions. These distortions may include changes to the average expense cost per claim relative to panel firms, as well as issues concerning the allocation of staff counsel costs (primarily salary and benefits) to individual claims. As such, the actuary needs to recognize that a shift between panel and staff counsel utilization can have substantial impact on their reserving statistics.

Legal bill auditing (or bill review) offers another complication to the actuary's expense reserve analysis. While the utilization of legal bill review has been challenged in some areas as a violation of attorney-client privilege, many claims professionals contend that bill review is a critical step in controlling escalating outside legal fees. The actuary needs to be aware that in addition to potential savings, the application of bill review may result in the delay of expense payments resulting from attorney challenges.

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The various claim initiatives and external factors discussed in this section are but a sample of the widespread array of changes affecting the insurance claim environment. To be responsive to these issues, the actuary must be prepared to engage in regular, detailed discussions with the Claims department in order to fully understand the implications of the initiatives. Armed with this knowledge, it then becomes possible to adjust traditional actuarial reserving methodologies to

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reflect these implications. In the next section, we address a number of these potential

adjustments.

Section 4 – Potential Adjustments to Traditional Actuarial Methodologies

The impact of a changing claims environment on traditional actuarial methodologies is not a new topic to the actuarial literature. Berquist and Sherman, as well as Fleming and Mayer[3] described approaches to address overall shifts in claims handling philosophy such as changes to settlement rate or case reserve adequacy. However, it is now clear that the complex interaction of numerous internal claim initiatives as well as environmental forces requires the development of additional actuarial procedures.

We offer a few tentative steps in what is sure to become a marathon of ideas in this area. The suggested approaches are not intended to be ground breaking, but more thought provoking in nature. Undoubtedly, there are far more questions left unanswered than we can even begin to address here.

A. Changes to Settlement Rates by Size of Loss

Berquist and Sherman noted the complexity introduced into the reserve analysis of a shift in claim's department emphasis by size of loss.

> "One problem which is susceptible to the size of loss approach is that of shifts in emphasis by the claims department on priorities in settling large versus small claims. Such a shift can cause major distortions in the loss projections of nearly all reserving methods."

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[3] Fleming, K.G. and Mayer, J.H., "Adjusting Incurred Losses For Simultaneous Shifts In Payment Patterns And Case Reserve Adequacy Levels"

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In response to this situation, Berquist and Sherman suggest segmenting the loss experience by size of loss prior to adjustment to equal percentiles of claims closed. As an alternative, we sought to develop an approach that adjusts the results of the Berquist – Sherman paid loss methodology for a shift in the size of claims being settled.

To illustrate, sample paid loss and closed claim count data is presented in Exhibit 1. The claims disposal (or settlement) rates derived from this information and shown in Exhibit 2 are consistent with an overall speed-up in settlement. Applying the Berquist – Sherman methodology, and adjusting the losses to common closure rates as defined by the latest evaluation produces the adjusted paid loss triangle in Exhibit 2.

As the settlement rate increases, we would generally anticipate an increase in the proportion of larger claims being settled (assuming that larger claims are settled later than smaller claims). If, however, the claims department contends that in addition to settling claims faster, it has focused specifically on reducing its pending large claim case load, an additional adjustment to the Berquist-Sherman methodology may be warranted.

The magnitude of this adjustment would be dependent upon the specific segment of claims being accelerated. In this example, we divide the loss experience into three strata:

- Less than $15,000 per claim
- Greater than $15,000 and less than $50,000
- Greater than $50,000 per claim

Closed claim counts for the greater than $50,000 layer are shown in Exhibit 3. The ratio of these counts to total claim counts reveals a generally increasing trend, supportive of the Claims department contention. To the degree that proportion of large claims settled exceeds that which

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would be explained by an increase in the overall settlement pattern, an additional adjustment should be made.

We can apply the Berquist-Sherman methodology to the ratios of large claims from Exhibit 3, adjusting these ratios to the current overall disposal rate. We exclude the latest diagonal of ratios, as these are the values we are attempting to project. Adjusted claim count ratios for claims greater than $50,000 are shown in Exhibit 4 as are selected values based on the averages from each disposal period as well as judgment.

Estimated paid claims in the strata (at the current overall disposal rate) may be derived from the product of the selected interpolated ratios and actual total paid claims. The difference between the estimated and actual paid claims in the greater than $50,000 strata (Column 6) suggests acceleration of larger claims beyond that anticipated in the Berquist-Sherman methodology. Relying upon the actual average paid claim for each accident year, adjusted paid losses are produced using the estimated claim count. These adjusted paid losses (Column 9) reflect the losses that would have been expected for the strata given the estimated closed claim count.

This same process is then repeated for the remaining loss strata (not shown in the exhibits). Total estimated claims and adjusted paid losses combining the results of each loss strata analysis are provided in Exhibit 5. We normalized the adjusted paid amounts in order to adjust for any difference between total projected claims and total actual claims.

Traditional Berquist-Sherman paid development factors derived from the adjusted paid loss for all loss layers combined (Exhibit 2) are shown in Column 8. These development factors are used to project the initial ultimate losses in Column 9. However, applying these same development factors to the normalized adjusted losses produces somewhat reduced ultimate estimates for

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nearly all accident years (Column 11), the result of which would be a lower reserve indication. This result is consistent with an increased acceleration of large claim settlement relative to the change in overall claim settlement.

B. The Use of Claim Metrics in Evaluating the Impact of Claim Initiatives

Drawn from operational management theory, project goals must be supported by specific objectives and processes to maximize the opportunity for success. In turn, quantifiable measurements or metrics must be designed and tracked to support these processes.

Increasingly, actuaries are being called upon to assist in quantifying the impact of various claims initiatives from the standpoint of strategic planning. In ideal situations, the actuary is involved during the design phase of the initiatives and has input into the identification of the metrics that will be used to monitor the program.

In our discussion, metrics are viewed as specific measurements of internal and external cost drivers. Properly constructed claim metric reports provide the actuary with an additional tool to monitor both the implementation and impact of various claim initiatives. Common internal claim metrics include:

- Suits to open claim ratios
- Attorney representation rates
- Third-party contact rates (contact time)
- Average claim settlements
- Ratio of bodily injury to property damage claim counts
- Pending claim counts
- Adjuster workload
- Staff counsel utilization levels

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Claim metrics can provide the actuary with the ability to construct regression models to distinguish between the influences of internal claims initiatives and external factors. To highlight the construction of a simplified regression model, we begin with the personal automobile bodily injury data shown in Exhibit 6. Once again, we are faced with an acceleration of settlement rate, which suggests application of the Berquist-Sherman technique. (As a simplifying assumption, no shift in settlement by size of loss is considered.)

The selected age-to-age development factors on Exhibit 7 are based on the average of the latest three incremental link ratios (after adjusting to common closure rates). As an alternative, on Exhibit 8, the selected factors for the first two development periods are based on the latest incremental factors only (in recognition of the apparent declining trend in the respective columns). But should the actuary anticipate that the favorable trend in the link ratios will continue?

In addition to an emphasis on settling claims faster, let us assume that there have been several claims department initiatives aimed at improving the ratio of bodily injury to property damage claims, reducing contact time for third-party claimants, as well as lowering the overall attorney representation rate on pending claims. Further, the Company has benefited from favorable medical inflation trends and increased seat-belt usage. Sample metrics describing these cost drivers (stated in terms of annual change) are shown in Exhibit 9.

Utilizing these metrics, a multiple regression model can be generated with the change in the Berquist-Sherman adjusted 12 to 24 month link ratios as the dependant variable. The resulting model parameters are:

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Fitted Change in Development Factor =

	Annual Change in:		
	BI/PD Claim Count Ratio	x	0.08797
+	Attorney Rep. Rate	x	2.68400
+	Contact Time	x	8.64900
+	Med. Inflation	x	0.04777
-	Restraint Use	x	0.61062
+	Constant		0.05177

R Squared	0.97976

In defining a regression model, the actuary must not only be aware of the fit statistics of the model, attention must also be paid to the (reasonability of the) sign of the coefficients. In this model, each of the coefficients suggests movement in the expected direction. For example, an increase in the attorney representation rate results in higher loss development, while an increase in restraint use generates lower loss development. The positive constant term is not surprising in that it suggests that without favorable results from the claims initiatives, loss development (and likely ultimate losses) will be subject to an increasing trend.

Fitted annual changes in the 12 to 24 month development factors derived from this model are shown in Exhibit 10. These fitted results are produced by applying the regression model parameters to the annual change in metrics provided in Exhibit 9. Note that the regression model and projected metrics produce an indicated increase of 3.84% in the dependent variable (12 to 24 month loss development) for the most recent year. Driving this increase are the less than favorable projected results for the medical inflation rate and the bodily injury to property damage claim ratio.

On-level adjustment factors implied by the fitted annual changes are used to adjust the Berquist-Sherman paid 12 to 24 month link ratios to the current metric level (Column 6). These development factors, which have now been adjusted to reflect changes in settlement as well as

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claim initiatives and external factors, indicate a 12 to 24 month link ratio of factor of 2.181. A similar regression model approach (not shown) developed for the 24 to 36 month period yielded an indicated link ratio factor of 1.334.

The regression model development indications on Exhibit 11 suggest a higher required reserve than would have been produced by simply relying upon the latest link ratios for the first two development periods. Had we extended the declining trend in these link ratios without giving consideration to the underlying metrics, the indicated reserve difference would have been greater.

This example clearly indicates two of the significant benefits derived from the use of regression models in loss development analysis. First, the relative magnitude of the coefficients permits identification of the internal initiatives and external factors with the greatest impact on loss development. Second, the regression model can permit earlier identification of turning points in loss development through leading indicators. However, the parameters of the model should be subjected to frequent re-evaluation and retuning in order to maintain their predictive value.

C. Adjusting for Changes in Legal Expenditures

In adjusting most traditional loss adjustment expense reserving methodologies, data segmentation is critical. Separate classification of expenses such as panel costs by alternative fee arrangement type, staff counsel costs by region, and legal bill auditing fees by claim type, allows the actuary to project future expense costs recognizing the changes implemented by the claims department.

The actuary should be aware of the size and composition of the claims department budget for legal costs. Depending upon their historical accuracy, the budget projections can serve as useful input in the actuary's reserve estimates. For example, the actual ratio of calendar paid expenses to paid losses may be declining as shown below.

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	Calendar Year			
	1997	1998	1999	2000
Legal Paid / Loss Paid	24%	22%	21%	19%
Selected Acc. Year 2000 Legal / Loss Ratio				17%

Based upon discussions with the claim department concerning future budgeted legal expenses, the actuary selects an accident year 2000 legal expense to loss ratio of 17%. This ratio assumes continuation of the improvement shown in the chart, as well as a lag between the accident year and actual suit emergence.

Exhibit 12 offers another possible use of budgeted legal expenses. In this example, the company has increased their reliance upon staff counsel attorneys. Further, it is believed that the staff counsel costs for the period 2001 to 2008 will grow by 4% per year and that no additional attorneys will be hired.

The percentage of open suits relating to accident years 2000 and prior can be estimated for each future calendar year based upon historical suit emergence and settlement rates. Applying these percentages to the budgeted staff counsel costs in these future years produces a staff counsel reserve estimate for the combined accident years. The resulting reserve estimate can serve as a reasonability check for the actuary's other projections, or can be allocated to the individual years for reporting purposes.

Data segmentation and detailed discussions with the Claims Department can also assist the actuary in recognizing the impact of alternative fee arrangements on their legal reserve estimates. This approach requires the actuary to project the average cost of legal fees on suits emerging prior

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to and after the introduction of the fee initiative. In doing so, the actuary must be aware of many issues including:

- Average outside attorney costs by state or region (and percentage of claims affected).
    - average fixed fee or matrix cost, including fees for trial
    - average retainer cost
    - average hourly rate
- Litigation rate by region or state.
- Utilization of Staff Counsel versus Panel Counsel.
- Emergence rate of new lawsuits.

A simplified reserving model based on many of these is shown in Exhibit 13. In this example, the company employs the use of both staff counsel attorneys and outside panel firms. The company has negotiated a series of flat fee and retainer agreements in five out of its six regions of business. Based on conversations with the Claims Department, the average cost of these arrangements is either $4,000 or $5,000 per suit, depending upon the region. In the remaining region, staff counsel attorneys are prohibited, and no fee arrangements have been implemented.

Of the approximately 3,500 claims the company anticipates being reported in the coming year, 37% will result in litigation. This rate will of course vary based on the litigousness of the various regions.

359 of the eventual suits will be handled in-house, with the remaining litigated claims distributed to the various panel firms. The weighted average panel cost by region of $5,729 indicates an average savings due to the alternative fee arrangements of 36% relative to the historical average external legal cost of $9,000 per litigated claim ($5,729 / $9,000 – 1 = 36%). However, this

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reduction represents the anticipated savings future for accident periods yet to be filed. The impact on prior accident years may be estimated by weighting this projected average with the average legal cost in place prior to entering into the agreements (Exhibit 14).

Conclusion

We have become convinced that static claims environments have become the exception rather than the rule. In a majority of situations, a combination of internal and external changes will render historical reserving experience of limited value unless one gains a detailed understanding of how this historical data will be affected by the changes. By developing effective communications with the insurer's operating areas, and adjusting the actuarial methodologies as warranted, the resulting reserve analysis is both more meaningful and more valuable in evaluating the benefits of the operational changes.

Exhibit 1

Cumulative Paid - All Layers ($000's)

Accident Year	12	24	36	48	60	72	84	96
1987	353.0	3,160.4	7,260.9	11,167.4	12,673.5	13,432.6	13,787.2	13,803.5
1988	370.4	3,285.1	8,888.0	14,013.5	16,827.2	17,588.2	18,378.0	19,145.8
1989	509.0	5,967.1	10,409.7	15,074.1	19,139.9	20,110.5	20,751.3	21,313.0
1990	1,016.7	6,368.6	12,502.1	16,891.8	19,992.9	22,408.5	23,359.7	23,362.9
1991	520.9	5,476.7	13,249.0	19,643.6	24,479.8	26,093.5	26,525.3	26,679.8
1992	707.9	6,704.2	15,158.6	19,858.4	22,682.1	24,580.7	25,865.0	26,607.8
1993	695.8	5,201.2	10,750.4	15,170.8	19,566.8	21,141.9	21,735.9	22,601.0
1994	744.8	5,292.2	10,722.8	16,440.3	21,350.1	24,625.1	26,087.9	
1995	1,325.0	6,406.4	15,453.1	22,103.8	26,030.2	28,384.4		
1996	1,298.7	9,210.2	18,938.0	29,172.2	38,053.0			
1997	1,055.9	6,948.3	17,774.2	29,262.8				
1998	1,590.4	9,889.9	25,804.4					
1999	2,212.5	11,071.4						
2000	1,398.4							

Cumulative Paid Counts - All Layers

Accident Year	12	24	36	48	60	72	84	96	Est. Ultimate Count
1987	97	398	572	700	745	766	773	773	776
1988	103	433	672	768	811	827	834	838	841
1989	154	554	771	881	933	952	961	965	971
1990	183	584	783	882	930	966	977	978	989
1991	180	520	715	830	886	906	913	915	927
1992	176	512	668	748	802	825	837	840	847
1993	162	488	647	731	796	815	821	826	833
1994	194	551	708	800	851	879	886		894
1995	209	598	817	916	996	1,020			1,042
1996	237	729	1,002	1,167	1,255				1,312
1997	258	714	991	1,154					1,287
1998	267	784	1,057						1,314
1999	298	774							1,246
2000	319								1,362

Exhibit 2

Ultimate Claims Disposed Ratios

Accident Yr	12	24	36	48	60	72	84	96
1987	13%	51%	74%	90%	96%	99%	100%	100%
1988	12%	51%	80%	91%	96%	98%	99%	100%
1989	16%	57%	79%	91%	96%	98%	99%	99%
1990	19%	59%	79%	89%	94%	98%	99%	99%
1991	19%	56%	77%	90%	96%	98%	98%	99%
1992	21%	60%	79%	88%	95%	97%	99%	99%
1993	19%	58%	77%	87%	95%	97%	98%	98%
1994	22%	62%	79%	89%	95%	98%	99%	
1995	20%	57%	78%	88%	96%	98%		
1996	18%	56%	76%	89%	96%			
1997	20%	55%	77%	90%				
1998	20%	60%	80%					
1999	24%	62%						
2000	23%							

Cumulative Paid - All Layers ($000's)
All Layers at Equal Percentiles of Ultimate Closed Counts

Accident Year	23%	62%	80%	90%	96%	98%	99%	99%
1987	654.2	5,834.2	9,311.0	11,011.0	12,577.1	13,197.7	13,599.3	13,688.9
1988	689.4	5,940.8	9,048.3	13,118.7	16,365.5	17,407.4	18,320.2	18,363.6
1989	799.5	8,084.8	10,675.5	14,558.3	18,775.5	20,033.1	20,848.3	21,007.9
1990	1,269.7	7,323.7	13,034.7	17,139.8	21,150.7	22,561.0	23,641.9	23,382.8
1991	673.2	8,069.6	15,208.8	19,724.6	24,549.8	26,214.3	26,884.2	27,008.0
1992	822.0	7,377.6	16,235.0	20,642.3	23,144.8	24,938.5	26,134.7	26,578.3
1993	853.2	6,243.6	11,933.3	16,193.9	19,628.9	21,179.0	22,199.3	22,601.0
1994	810.2	5,424.4	11,261.2	16,562.2	21,807.4	24,142.8	26,087.9	
1995	1,526.7	7,827.6	16,808.4	23,615.5	26,067.9	28,384.4		
1996	1,717.5	12,983.8	21,785.5	29,900.3	38,053.0			
1997	1,263.0	9,901.0	20,630.4	29,262.8				
1998	1,836.9	11,103.8	25,804.4					
1999	2,165.6	11,071.4						
2000	1,398.4							

Exhibit 3

Paid Claim Counts > $50,000

Accident Year	12	24	36	48	60	72	84	96
1987	1.0	10.0	27.0	48.0	56.0	60.0	62.0	62.0
1988	1.0	7.0	27.0	56.0	67.0	72.0	78.0	80.0
1989	1.0	13.0	29.0	53.0	76.0	82.0	85.0	89.0
1990	1.0	12.0	41.0	62.0	81.0	95.0	101.0	101.0
1991	0.5	13.0	45.0	79.0	108.0	114.0	117.0	118.0
1992	0.5	17.0	50.0	74.0	90.0	102.0	109.0	111.0
1993	1.0	14.0	42.0	62.0	81.0	92.0	96.0	98.0
1994	0.5	14.0	33.0	65.0	88.0	104.0	111.0	
1995	3.0	15.0	64.0	95.0	120.0	134.0		
1996	2.0	25.0	63.0	117.0	161.0			
1997	0.5	17.0	75.0	136.0				
1998	3.0	33.0	94.0					
1999	5.0	35.0						
2000	3.0							

Paid Claim Counts > $50,000 / Total Paid Counts

Accident Year	12	24	36	48	60	72	84	96
1987	1.0%	2.5%	4.7%	6.9%	7.5%	7.8%	8.0%	8.0%
1988	1.0%	1.6%	4.0%	7.3%	8.3%	8.7%	9.4%	9.6%
1989	0.6%	2.3%	3.8%	6.0%	8.1%	8.6%	8.8%	9.2%
1990	0.5%	2.1%	5.2%	7.0%	8.7%	9.8%	10.3%	10.3%
1991	0.3%	2.5%	6.3%	9.5%	12.2%	12.6%	12.8%	12.9%
1992	0.3%	3.3%	7.5%	9.9%	11.2%	12.4%	13.0%	13.2%
1993	0.6%	2.9%	6.5%	8.5%	10.2%	11.3%	11.7%	11.9%
1994	0.3%	2.5%	4.7%	8.1%	10.3%	11.8%	12.5%	
1995	1.4%	2.5%	7.8%	10.4%	12.0%	13.1%		
1996	0.8%	3.4%	6.3%	10.0%	12.8%			
1997	0.2%	2.4%	7.6%	11.8%				
1998	1.1%	4.2%	8.9%					
1999	1.7%	4.5%						
2000	0.9%							

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Exhibit 4

Paid Claim Counts > $50,000 / Total Paid Counts
at Equal Percentiles of Ultimate Closed Counts (ALL)

Accident Year	23%	62%	80%	90%	96%	98%	99%	99%
1987	1.3%	3.2%	5.7%	6.8%	7.5%	7.7%	7.9%	8.1%
1988	1.1%	1.9%	4.1%	6.7%	8.1%	8.6%	9.3%	9.3%
1989	0.8%	2.7%	3.8%	5.8%	7.9%	8.6%	8.9%	9.0%
1990	0.6%	2.3%	5.5%	7.1%	9.4%	9.9%	10.5%	10.3%
1991	0.4%	3.6%	7.3%	9.6%	12.2%	12.6%	13.0%	13.1%
1992	0.3%	3.7%	8.0%	10.3%	11.4%	12.6%	13.2%	13.2%
1993	0.7%	3.4%	7.5%	9.1%	10.4%	11.7%	12.5%	
1994	0.3%	2.6%	4.9%	8.2%	10.5%	11.6%		
1995	1.5%	2.7%	8.7%	10.9%	12.1%			
1996	1.0%	4.4%	7.1%	10.3%				
1997	0.2%	3.8%	9.1%					
1998	1.2%	4.6%						
1999	1.7%							
Last Diag.	1.7%	4.6%	9.1%	10.3%	12.1%	11.6%	12.5%	
Avg Last 3	1.1%	4.3%	8.3%	9.8%	11.0%	12.0%	12.9%	
Selected	1.0%	4.4%	8.8%	10.3%	12.1%	11.6%	12.5%	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Estimated			Actual	Average	Adj.
	Paid	Ratio of	Count	Actual		Paid on	Paid on	Paid on
	Count	Claims	of Claims	Claims		Claims	Claims	Claims
Acc Year	(ALL)	> 50K	> 50K	> 50K	Difference	> 50K	> 50K	> 50K
1994	886	12.5%	110.8	111	0	$17,518	$157.8	$17,493
1995	1020	11.6%	118.5	134	16	$18,277	$136.4	$16,156
1996	1255	12.1%	151.4	161	10	$25,028	$155.5	$23,537
1997	1154	10.3%	118.8	136	17	$17,969	$132.1	$15,699
1998	1057	8.8%	93.0	94	1	$15,970	$169.9	$15,803
1999	774	4.4%	34.1	35	1	$5,287	$151.0	$5,144
2000	319	1.0%	3.2	3	(0)	$448	$149.2	$476
Total	6465		629.8	674	44.2	$100,496		$94,307

(2) Exhibit 1: Cumulative Paid Claim Counts - All Layers
(3) Selected
(4) = (2) x (3)
(6) = (5) - (4)
(8) = (7) / (5)
(9) = (4) x (8)

Exhibit 5

Cumulative Adjusted Paid - All Layers ($000's)

(1)	(2)	(3)	(4)	(5)
Acc Year	Actual Claims	Estimated Claims	Adjusted Paid	Normalized Adjusted Paid
1994	886	886	$26,410	$26,398
1995	1,020	1,020	$25,727	$25,732
1996	1,255	1,255	$36,435	$36,434
1997	1,154	1,155	$27,775	$27,751
1998	1,057	1,067	$25,888	$25,644
1999	774	778	$10,821	$10,769
2000	319	322	$1,554	$1,541
Total	6,465	6,483	$154,610	$154,270

(6)	(7)	(8)	(9)	(10)	(11)	(12)
Acc Year	Actual Paid	Berquist / Sherman Paid DFU	Initial Ultimate	Adjusted Paid Loss	Adjusted Ultimate	Difference
1994	$26,088	1.022	$26,670	$26,398	$26,987	$317
1995	$28,384	1.073	$30,459	$25,732	$27,613	($2,847)
1996	$38,053	1.132	$43,074	$36,434	$41,241	($1,833)
1997	$29,263	1.420	$41,544	$27,751	$39,398	($2,146)
1998	$25,804	1.976	$50,980	$25,644	$50,664	($316)
1999	$11,071	4.036	$44,680	$10,769	$43,461	($1,219)
2000	$1,398	24.986	$34,941	$1,541	$38,512	$3,571
Total	$160,062		$272,349	$154,270	$267,876	($4,472)
Total Excld 2000	$158,664		$237,408	$152,729	$229,364	($8,043)

(2) Exhibit 1: Cumulative Paid Claim Counts - All Layers
(3) Summation of estimated claim counts from all layers analyzed. (Includes layers not shown in Exhibits)
(4) Summation of adjusted paid losses from all layers analyzed. (Includes layers not shown in Exhibits)
(5) = (4) / (3) x (2)
(7) Exhibit 1: Cumulative Paid Loss - All Layers
(9) = (7) x (8)
(10) = (5)
(11) = (10) x (8)
(12) = (11) - (9)

Exhibit 6

Private Passenger Automobile Liability (000's)
Paid Loss Development

Accident Year	12	24	36	Development Month 48	60	72	84	96
1991	1,118	2,712	4,000	4,864	5,384	5,650	5,812	5,892
1992	1,266	2,974	4,281	5,170	5,669	5,960	6,106	6,170
1993	1,251	2,898	4,217	5,070	5,550	5,812	5,939	6,002
1994	1,241	2,848	4,064	4,855	5,331	5,568	5,691	
1995	1,248	2,802	4,030	4,860	5,332	5,559		
1996	1,338	3,018	4,329	5,178	5,684			
1997	1,569	3,407	4,780	5,773				
1998	1,626	3,461	4,800					
1999	1,808	3,796						
2000	1,820							

Link Ratios

Accident Year	12	24	36	48	60	72	84	To Ult
1991	2.427	1.475	1.216	1.107	1.049	1.029	1.014	
1992	2.349	1.439	1.208	1.096	1.051	1.024	1.010	
1993	2.318	1.455	1.202	1.095	1.047	1.022	1.011	
1994	2.295	1.427	1.195	1.098	1.045	1.022		
1995	2.245	1.438	1.206	1.097	1.043			
1996	2.255	1.435	1.196	1.098				
1997	2.171	1.403	1.208					
1998	2.129	1.387						
1999	2.100							
Selected	2.132	1.407	1.203	1.098	1.045	1.023	1.012	1.000
DFU	4.282	2.009	1.428	1.187	1.081	1.035	1.012	1.000

Disposal Rate

Acc Year	12	24	36	48	60	72	84	96
1991	0.650	0.865	0.940	0.970	0.980	0.990	0.995	1.000
1992	0.650	0.865	0.940	0.970	0.980	0.990	0.995	1.000
1993	0.660	0.865	0.940	0.970	0.980	0.990	0.995	1.000
1994	0.660	0.865	0.940	0.970	0.980	0.990	0.995	
1995	0.660	0.865	0.940	0.970	0.980	0.990		
1996	0.660	0.865	0.940	0.975	0.985			
1997	0.660	0.870	0.950	0.975				
1998	0.660	0.870	0.950					
1999	0.670	0.880						
2000	0.670							

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Exhibit 7

Paid Loss Development - Berquist Sherman Adjustment ($000's)

Accident Year	12	24	36	48	60	72	84	96
				Development Month				
1991	1,240	2,957	4,283	5,123	5,517	5,650	5,812	5,892
1992	1,398	3,222	4,572	5,418	5,814	5,960	6,106	6,170
1993	1,317	3,149	4,496	5,309	5,681	5,812	5,939	6,002
1994	1,306	3,079	4,323	5,092	5,449	5,568	5,691	
1995	1,311	3,035	4,302	5,095	5,445	5,559		
1996	1,406	3,266	4,566	5,178	5,684			
1997	1,642	3,569	4,780	5,773				
1998	1,699	3,619	4,800					
1999	1,808	3,796						
2000	1,820							

Link Ratios

Accident Year	12	24	36	48	60	72	84	To Ult
1991	2.384	1.449	1.196	1.077	1.024	1.029	1.014	
1992	2.305	1.419	1.185	1.073	1.025	1.024	1.010	
1993	2.390	1.428	1.181	1.070	1.023	1.022	1.011	
1994	2.357	1.404	1.178	1.070	1.022	1.022		
1995	2.314	1.417	1.184	1.069	1.021			
1996	2.323	1.398	1.134	1.098				
1997	2.173	1.339	1.208					
1998	2.130	1.326						
1999	2.100							
Selected	2.133	1.353	1.176	1.079	1.022	1.023	1.012	1.000
DFU	3.872	1.815	1.341	1.141	1.057	1.035	1.012	1.000

Accident Year	Paid Loss	Paid Dev. Ult	Berquist / Sherman Dev. Ult
1991	5,892	5,892	5,892
1992	6,170	6,170	6,170
1993	6,002	6,002	6,002
1994	5,691	5,757	5,757
1995	5,559	5,752	5,752
1996	5,684	6,144	6,010
1997	5,773	6,850	6,587
1998	4,800	6,853	6,438
1999	3,796	7,627	6,891
2000	1,820	7,794	7,048
Total	**$ 51,187**	**$ 64,840**	**$ 62,546**
Reserve		**$ 13,654**	**$ 11,359**

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Exhibit 8

Paid Loss Development - Berquist Sherman Adjustment - Alternative Selection ($000's)

Accident				Development Month				
Year	12	24	36	48	60	72	84	96
1991	1,240	2,957	4,283	5,123	5,517	5,650	5,812	5,892
1992	1,398	3,222	4,572	5,418	5,814	5,960	6,106	6,170
1993	1,317	3,149	4,496	5,309	5,681	5,812	5,939	6,002
1994	1,306	3,079	4,323	5,092	5,449	5,568	5,691	
1995	1,311	3,035	4,302	5,095	5,445	5,559		
1996	1,406	3,266	4,566	5,178	5,684			
1997	1,642	3,569	4,780	5,773				
1998	1,699	3,619	4,800					
1999	1,808	3,796						
2000	1,820							

				Link Ratios				
Accident								
Year	12	24	36	48	60	72	84	To Ult
1991	2.384	1.449	1.196	1.077	1.024	1.029	1.014	
1992	2.305	1.419	1.185	1.073	1.025	1.024	1.010	
1993	2.390	1.428	1.181	1.070	1.023	1.022	1.011	
1994	2.357	1.404	1.178	1.070	1.022	1.022		
1995	2.314	1.417	1.184	1.069	1.021			
1996	2.323	1.398	1.134	1.098				
1997	2.173	1.339	1.208					
1998	2.130	1.326						
1999	2.100							
Selected	2.100	1.326	1.176	1.079	1.022	1.023	1.012	1.000
DFU	3.737	1.779	1.341	1.141	1.057	1.035	1.012	1.000

Acc Year	Paid Loss	Paid Dev. Ult	Berquist / Sherman Dev. Ult	Alternative B/S Dev. Ult
1991	5,892	5,892	5,892	5,892
1992	6,170	6,170	6,170	6,170
1993	6,002	6,002	6,002	6,002
1994	5,691	5,757	5,757	5,757
1995	5,559	5,752	5,752	5,752
1996	5,684	6,144	6,010	6,010
1997	5,773	6,850	6,587	6,587
1998	4,800	6,853	6,438	6,438
1999	3,796	7,627	6,891	6,755
2000	1,820	7,794	7,048	6,801
Total	**$ 51,187**	**$ 64,840**	**$ 62,546**	**$ 62,163**
Reserve		**$ 13,654**	**$ 11,359**	**$ 10,976**

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Exhibit 9

Private Passenger Automobile Liability
Sample Claim Metrics

						Annual Change in:		
Acc Year	12 - 24 B/S Dev Factor	Change	BI to PD Ratio	Attorney Rep. Rate	Contact Time		Medical Inflation	Restraint Use
1991	2.384							
1992	2.305	-3.32%	-1.17%	0.43%	-0.78%		4.33%	4.30%
1993	2.390	3.72%	3.86%	0.65%	-0.65%		17.13%	-2.00%
1994	2.357	-1.39%	-4.86%	0.71%	-0.45%		-3.54%	5.99%
1995	2.314	-1.81%	-3.90%	0.62%	-0.48%		-15.15%	6.55%
1996	2.323	0.35%	1.25%	0.65%	-0.33%		-19.68%	4.75%
1997	2.173	-6.43%	-7.72%	-0.10%	-0.85%		-19.81%	3.60%
1998	2.130	-1.97%	-2.34%	-0.20%	-0.64%		-5.54%	2.06%
1999	2.100	-1.41%	-0.68%	-0.31%	-0.34%		-22.44%	2.10%
2000*			0.08%	-0.11%	-0.12%		12.47%	1.00%

*projected

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Exhibit 10

Private Passenger Automobile Liability
Regression Model - Fitted Change in Loss Development Factors

Acc Year	BI/PD Ratio	Attorney	Contact	Med Inflation	Restraint Use	Constant	Fitted Change
	0.088	2.684	8.649	0.048	-0.611	0.052	
1992	-0.103%	1.154%	-6.746%	0.207%	-2.626%	5.177%	-2.937%
1993	0.340%	1.745%	-5.622%	0.818%	1.221%	5.177%	3.679%
1994	-0.428%	1.906%	-3.892%	-0.169%	-3.660%	5.177%	-1.066%
1995	-0.343%	1.664%	-4.152%	-0.724%	-3.998%	5.177%	-2.375%
1996	0.110%	1.745%	-2.854%	-0.940%	-2.900%	5.177%	0.338%
1997	-0.679%	-0.268%	-7.352%	-0.946%	-2.198%	5.177%	-6.267%
1998	-0.206%	-0.537%	-5.535%	-0.265%	-1.257%	5.177%	-2.623%
1999	-0.060%	-0.832%	-2.941%	-1.072%	-1.282%	5.177%	-1.010%
2000	0.007%	-0.295%	-1.038%	0.596%	-0.611%	5.177%	3.836%

=coefficent x annual change in metric

	(1)	(2)	(3)	(4)	(5)	(6)
				Fitted		On-Level
	12 - 24			12 - 24		12 - 24
Acc	B/S Dev		Fitted	B/S Dev	Adjust.	B/S Dev
Year	Factor	Change	Change	Factor	Factors	Factor
1991	2.384			2.384	0.854	2.181
1992	2.305	-3.32%	-2.94%	2.314	0.899	2.173
1993	2.390	3.72%	3.68%	2.399	0.844	2.174
1994	2.357	-1.39%	-1.07%	2.373	0.860	2.167
1995	2.314	-1.81%	-2.38%	2.317	0.897	2.179
1996	2.323	0.35%	0.34%	2.325	0.892	2.179
1997	2.173	-6.43%	-6.27%	2.179	1.002	2.175
1998	2.130	-1.97%	-2.62%	2.122	1.053	2.190
1999	2.100	-1.41%	-1.01%	2.100	1.073	2.181
2000			3.84%	2.181	1.000	
					Selected	2.181

(1) = Exhibit 7: 12 - 24 month (67% closed) link ratio
(2) = (1) / (1) prior - 1.00
(3) = regression model result
(4) = (1.00 + (3)) x (4)prior
(5) = ((4)2000 - 1.00) / ((4) - 1.00)
(6) = ((1) - 1.00) x (5)) + 1.00

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Exhibit 11

Paid Loss Development - Berquist Sherman Adjustment - Regression Analysis ($000's)

Accident				Development Month				
Year	12	24	36	48	60	72	84	96
1991	1,240	2,957	4,283	5,123	5,517	5,650	5,812	5,892
1992	1,398	3,222	4,572	5,418	5,814	5,960	6,106	6,170
1993	1,317	3,149	4,496	5,309	5,681	5,812	5,939	6,002
1994	1,306	3,079	4,323	5,092	5,449	5,568	5,691	
1995	1,311	3,035	4,302	5,095	5,445	5,559		
1996	1,406	3,266	4,566	5,178	5,684			
1997	1,642	3,569	4,780	5,773				
1998	1,699	3,619	4,800					
1999	1,808	3,796						
2000	1,820							

				Link Ratios			
Accident							
Year	12	24	36	48	60	72	84
1991	**2.181**	**1.334**	1.196	1.077	1.024	1.029	1.014
1992	**2.173**	**1.331**	1.185	1.073	1.025	1.024	1.010
1993	**2.174**	**1.337**	1.181	1.070	1.023	1.022	1.011
1994	**2.167**	**1.324**	1.178	1.070	1.022	1.022	
1995	**2.179**	**1.332**	1.184	1.069	1.021		
1996	**2.179**	**1.334**	1.134	1.098			
1997	**2.175**	**1.338**	1.208				
1998	**2.190**	**1.333**					
1999	**2.181**						
Selected	**2.181**	**1.334**	1.176	1.079	1.022	1.023	1.012	1.000
DFU	**3.902**	**1.789**	1.341	1.141	1.057	1.035	1.012	1.000

Acc Year	Paid Loss	Paid Dev. Ult	Berquist / Sherman Dev. Ult	Altern. B/S Dev. Ult	Regression Adjusted Dev. Ult
1991	5,892	5,892	5,892	5,892	5,892
1992	6,170	6,170	6,170	6,170	6,170
1993	6,002	6,002	6,002	6,002	6,002
1994	5,691	5,757	5,757	5,757	5,757
1995	5,559	5,752	5,752	5,752	5,752
1996	5,684	6,144	6,010	6,010	6,010
1997	5,773	6,850	6,587	6,587	6,587
1998	4,800	6,853	6,438	6,438	6,438
1999	3,796	7,627	6,891	6,755	6,793
2000	1,820	7,794	7,048	6,801	7,102
Total	$ 51,187	$ 64,840	$ 62,546	$ 62,163	$ 62,502

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Exhibit 12

Estimated Staff Counsel Expense Reserve

(1)	(2)	(3)	(4)
Calendar Year	Budgeted Staff Counsel	Accident Year 2000 and Prior	Implied Reserve
	($000)		($000)
2001	10,000	90%	9,000
2002	10,400	72%	7,488
2003	10,816	58%	6,273
2004	11,249	46%	5,174
2005	11,699	37%	4,328
2006	12,167	29%	3,528
2007	12,653	20%	2,531
2008	13,159	9%	1,184
Total			39,507

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Exhibit 13

Estimated Average Litigation Cost Under Retainer Agreements & Flat Fee Arrangements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
					Estimated	Estimated	External
	Projected	Litigation	Litigated	Staff	Staff	External	Average
Region	Claims	Rate	Claims	Rate	Claims	Claims	Cost
A	412	56%	231	60%	138	92	$ 5,000
B	222	39%	87	30%	26	61	$ 5,000
C	132	47%	62	30%	19	43	$ 5,000
D	91	73%	66	75%	50	17	$ 4,000
E	1,221	47%	574	22%	126	448	$ 4,000
Other	1,445	20%	289	0%		289	$ 9,000
Total	3,523	37%	1,309	27%	359	950	$ 5,729

(4) = (2) x (3)
(6) = (4) x (5)
(7) = (4) - (6)
Total (8) = Weighted Average of (8) and (7)

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Exhibit 14

Emergence of Savings Under Retainer Agreements & Flat Fee Arrangements

(1)	(2)	(3)	(4)	(5)	(6)
Development Months	Litigation Emergence Rate	Cumulative Litigation Emergence	Historical Average	Projected Average	Weighted Litigation Cost
12	23%	23%	$ 9,000	$ 5,729	6,481
24	34%	57%	$ 9,000	$ 5,729	7,593
36	18%	75%	$ 9,000	$ 5,729	8,182

(3) = Summation of (2)

(5) from Exhibit 13

(6) = ((3) x (4)) + [(1.00 - (3)) x (5)]