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RESERVING PROBLEMS ENCOUNTERED IN GENERAL LIABILITY BUSINESS IN THE USA

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RESERVING PROBLEMS ENCOUNTERED IN GENERAL LIABILITY BUSINESS IN THE U.S.A.

Actuaries in the U.K. have, no doubt, personally encountered or been shocked by great losses caused by upward development in U.S. general liability reserves, especially products liability. Don't feel alone. Many U.S. insurance executives badly miscalculated the reserves and pricing necessary for general liability as the line grew rapidly into a major line of business beginning with the "products liability crisis" in 1974 and continuing through the 1980's.

The goal of this discussion and paper is to share examples and data collected from seventeen years personal involvement in general liability reserving in the U.S. Perhaps some of what is presented will be useful as a point of reference and help the reader avoid underestimating loss development and avoid analysis pitfalls into which many have fallen.

The paper is divided into four sections.

- Incurred Loss Development Differences by Subline
- Differences in Incurred Loss Development Within Subline
- Differing Approaches to Claims Administration
- Recognizing and Adjusting for Changes Within a Reserve History

Incurred Loss Development Differences by Subline

Most general liability in the U.S. is written on the ISO occurrence form or a form adapted from it, which has separate sections and limits for premises and products/completed operation coverages. Exhibit 1 shows typical incurred loss emergence patterns and indicated loss development factors for premises general liability and products liability. Factors for OL+T premises liability and hospital professional liability have also been included to provide a more complete picture. The term OL+T harks back to coverage prior to 1983 and stands for Owners, Landlords & Tenants. This refers to the large group of exposures which are premises liability exposures for low severity retail and service industry premises. A number of major insurers in the United States continue to keep records split between OL+T type premises and other premises general liability because the emergence pattern is faster and required development factors lower for the OL+T type exposure, which is mainly slip and fall. Hospital professional liability has been included because in most institutions the hospital professional and general liability losses are really co-mingled because it is difficult to separate general liability claims from professional liability claims. It is not unusual for the number of claims for injury taking place outside of the operating arena to be a significant number of the total claims.

Exhibit 1

Emergence Patterns and Loss Development Factors
For General Liability Incurred Losses

Incurred Loss Emergence

	Months After Policy Inception						
Subline	12	24	36	48	60	72	84
OL+T Premises	0.36	0.60	0.77	0.88	0.93	0.95	0.97
Premises General Liability	0.28	0.53	0.70	0.82	0.88	0.91	0.93
Products Liability	0.14	0.34	0.52	0.64	0.71	0.78	0.81
Hospital Professional	0.20	0.44	0.61	0.74	0.81	0.91	0.95

Incurred Loss Development Factors to Ultimate

	Months After Policy Inception						
Subline	12	24	36	48	60	72	84
OL+T Premises	2.78	1.67	1.30	1.13	1.07	1.05	1.03
Premises General Liability	3.58	1.87	1.43	1.22	1.13	1.10	1.07
Products Liability	7.00	2.90	1.94	1.56	1.40	1.29	1.23
Hospital Professional	5.03	2.27	1.64	1.36	1.23	1.10	1.05

NOTES: These are approximate U.S. insurance industry patterns derived from data collected in late 1989.

OL+T Premises refers to low severity retail and service industry premises exposure.

Other Premises general liability is broad general liability coverage excluding products, pollution and professional liability.

Product liability excludes asbestosis.

The majority of this discussion will concentrate on the premises general liability and products liability sublines. Note for premises liability that approximately 28% of ultimate incurred losses are known and reserved as of 12 months, or the end of the policy. This means that because of the late reported true IBNR cases and upward development on known losses, it is likely losses will increase more than three and one-half times from 12 months to ultimate. This is indicated by the industry loss development factor of 3.58 shown in the lower half of Exhibit 1.

As of 24 months it is common that approximately 53% of ultimate losses are reserved in case reserves, implying a required loss development factor that is still nearly 2.0. Following the emergence pattern and loss development

factors for premises general liability across the page on Exhibit 1 shows the typical industry case incurred development pattern.

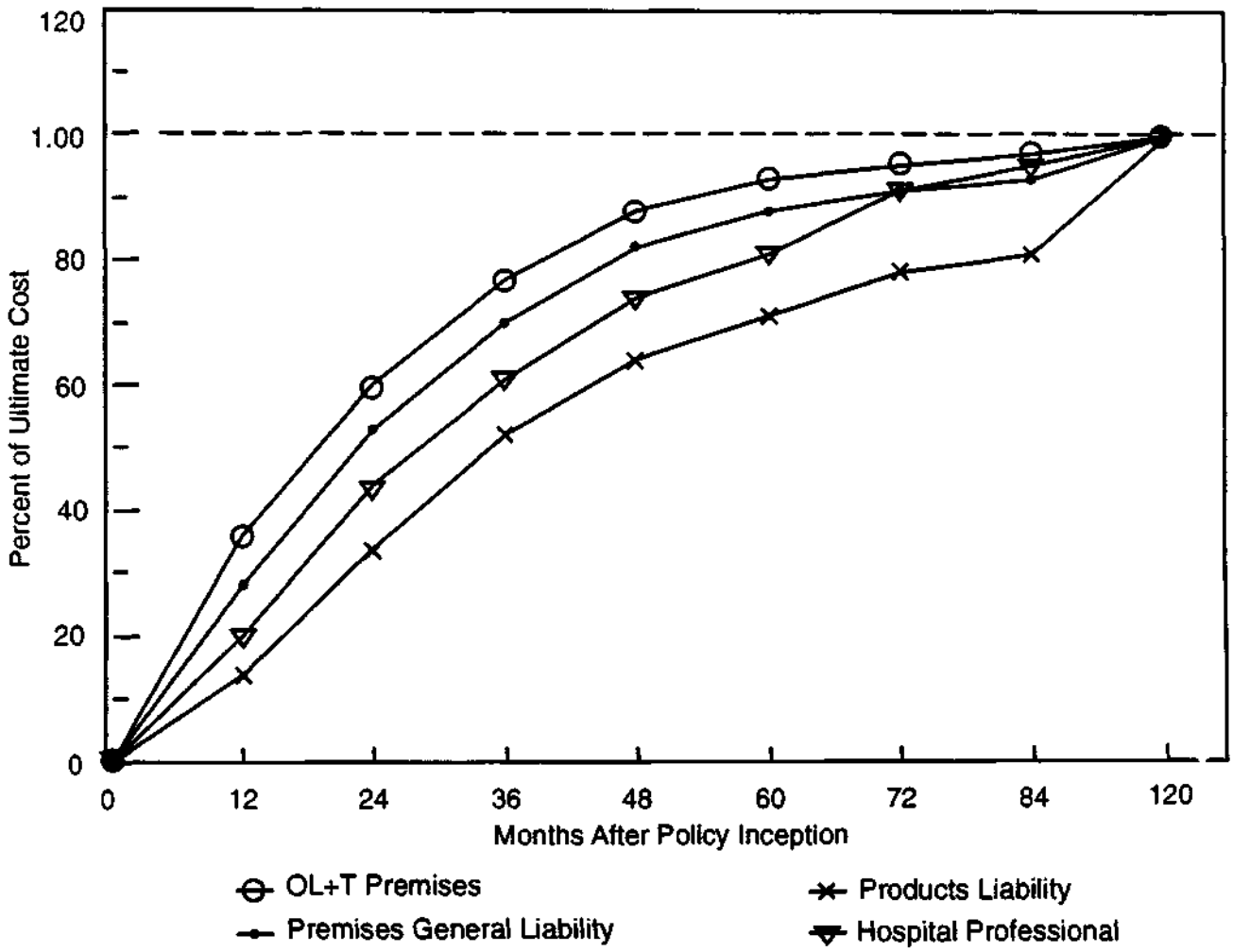
Most claims have been reported by 24 months with some few additional IBNR claims coming in after that point. The majority of upward development after 24 months is the result of increases in case reserves as the facts of the loss become known and legal proceedings progress. The development which remains after 60 months is generally the result of litigation of the largest claims. It is not unusual in major metropolitan areas for a difficult general liability civil action suit to take five or more years from time of occurrence until court trial date.

If we turn our attention now to products liability we see that as of 12 months only 14% of estimated ultimate liabilities are commonly known. As of 36 months, still only slightly more than half of the ultimate cost of products liability claims is often reserved on a case basis. And these calculations exclude the effect of the asbestosis, which as you know, has even a longer latency and development period.

Exhibit 2 shows these same emergence patterns common to the U.S. insurance industry in a graphic form.

Exhibit 2

Emergence Patterns
for General Liability Incurred Losses
By Subline



Differences in Incurred Loss Development Within Subline

It is certainly important to recognize differences in development patterns between sublines. But I urge you not to get trapped into aggregating data only by subline! In many cases a split of data by subline will suffice. However, in some cases, it will not.

Nothing can make such a point better than an actual example. This particular example deals with product liability, and is nearly unaltered data from an actual insurance company reserve situation. The exhibits in this example concentrate on claim counts. But it should not be hard for any experienced reserve analyst to imagine what effects would appear in incurred or payment reserve methods, realizing that development patterns in loss dollars are much more extended than those for claim counts.

Exhibit 3, Section A shows the four most current data diagonals of a claim count development triangle for aggregated products bodily injury liability of a major insurance company. Upon a brief review, the main observation might be that something unusual has caused an abnormal volume of claims in accident year 1976.

Exhibit 3

Products Bodily Injury
Aggregated Claim Count Development
For Claims With Incurred Cost

A. Reported Claim Counts

	Months of Development								
Accident Year	12	24	36	48	60	72	84	96	108
1974								1,926	1,930
1975							2,126	2,110	2,608
1976						3,356	6,770	10,919	12,229
1977					971	970	956	948	
1978				916	890	909	909		
1979			1,031	1,166	1,175	1,389			
1980		1,107	1,188	1,232	1,247				
1981	1,029	1,048	1,130	1,189					
1982	718	850	908						
1983	843	1,012							

Exhibit 3 (Continued)

B. Age-to-Age Development Factors

Accident Year	Development for Months 12:24	24:36	36:48	48:60	60:72	72:84	84:96	96:108
1974								1.00
1975							0.99	1.23
1976						2.02	1.61	1.12
1977					1.00	0.99	0.99	
1978				0.97	1.02	1.00		
1979			1.13	1.01	1.18			
1980		1.07	1.04	1.01				
1981	1.02	1.08	1.05					
1982	1.18	1.07						
1983	1.21							
Revised Format								
2nd Prior	1.02	1.07	1.13	0.97	1.00	2.02	0.99	1.00
1st Prior	1.18	1.08	1.04	1.01	1.02	0.99	1.61	1.23
Latest	1.21	1.07	1.05	1.01	1.18	1.00	0.99	1.12
Avg. Annual	1.14	1.07	1.07	1.00	1.07	1.34	1.20	1.12
Cumulative Annual	2.52	2.21	2.07	1.93	1.93	1.80	1.34	

Perhaps Exhibit 3, Section B, showing claim count development factors, brings other questions into view. This section shows the development factors in the triangle format and then also at the bottom of the section in a revised, more compact format. In this format we can notice the obvious outliers in the tail of the data, those from the 1976 years, plus also individual factors from 1975 and 1979. A glance again at Section A, shows the dramatic increase in counts in the 1976 year and also to a lesser degree in 1975 and 1979. We knew that this company had been indexing some large blocks of claims for asbestosis. We decided to segregate asbestosis and adjust our claim counts and loss development triangles by removing the asbestosis counts.

Exhibit 4 shows the claim count development triangle and the resulting development factors after the exclusion of asbestosis claims. We see that after eliminating the asbestosis, the development patterns for the individual age-to-age or 12 month development periods really fall into place and make more sense. But what about 12:24, it looks like it's trending strongly upward when other age-to-age ratios are constant. If we look up at the counts we see what seems to be a rather strange pattern from 1978 through 1983, with the volume of claim counts being quite unstable.

Exhibit 4

Products Bodily Injury Excluding Asbestosis
Claim Count Development and Factors
For Claims With Incurred Cost

	Months of Development								
Accident Year	12	24	36	48	60	72	84	96	108
1974								1,649	1,647
1975							1,455	1,458	1,457
1976						1,146	1,137	1,134	1,139
1977					945	944	944	944	
1978				886	862	862	862		
1979			937	978	975	976			
1980		1,092	1,164	1,200	1,218				
1981	1,023	1,033	1,110	1,139					
1982	702	792	838						
1983	841	1,011							

	Development for Months							
	12 24	24 36	36 48	48 60	60 72	72 84	84 96	96 108
2nd Prior	1 01	1 07	1 04	0 97	1 00	0 99	1 00	1 00
1st Prior	1 13	1 07	1 03	1 00	1 00	1 00	1 00	1 00
Latest	1 20	1 06	1 03	1 02	1 00	1 00	1 00	1 00
Average Annual	1 11	1 07	1 03	1 00	1 00	1 00	1 00	1 00
Cumulative Average	1 22	1 10	1 03	1 00				

At such a point one needs to think about what he knows about exposures during such a period. My understanding was that the exposure in this subline decreased from 1976 through 1978 as the company reunderwrote their book of business. But I had understood that exposures were basically flat for years 1978 through 1981, and then began to grow again in 1982 and 1983. These counts certainly don't seem to show that.

To make a long story short, we found that this company had put nine accounts on the books concentrated in the period from 1978 through 1981 which were basically involved in the food products industry. These accounts manufactured various food products for public consumption. Their experience tended to have rather high frequency, and at the same time, low severity.

We also found that one large account has been switched from a high deductible to a full coverage basis. This particular account manufactured automobile batteries with a well-documented frequency and severity pattern.

Both the nine food products accounts and the one battery manufacturer had their data embedded in the larger block of data called products liability bodily injury. We decided to also segregate the data for these particular food products and batter manufacturer accounts. We then arrived at the pattern shown at the bottom of Exhibit 5. This pattern is much more stable and agrees with our a priori knowledge of the exposure changes for this period of time.

Exhibit 5

Food Product and Battery Manufacturer
Claim Count Development
For Claims With Incurred Cost

	Months of Development								
Accident Year	12	24	36	48	60	72	84	96	108
Nine Food Products Available									
1977					57	57	56	56	
1978				139	139	139	139		
1979			265	265	262	261			
1980		521	514	512	510				
1981	486	427	413	410					
1982	47	39	38						
1983	58	50							
One Battery Manufacturer									
1982	18	55	58						
1983	158	222							
Count Development Excluding Asbestosis, Food Products, and Battery Manufacturer									
1974								1,649	1,647
1975							1,455	1,458	1,457
1976						1,146	1,137	1,134	1,139
1977					888	887	888	888	
1978				747	723	723	723		
1979			672	713	713	715			
1980		571	650	688	708				
1981	537	606	697	729					
1982	637	698	742						
1983	625	739							

Exhibit 6 shows three sets of development factors. First we see the factors excluding asbestosis, food products, and the battery manufacturer. These are the factors that we finally arrived at to be used for the basic book of products liability for this company. Had we excluded only the asbestosis and used a three-year average of factors, we would have utilized the factors in the middle of the table. You can see how this might have misled us, especially

when estimating claim counts and reserves for the two most recent years. At the bottom of the exhibit you see the factors for total aggregated products liability including the asbestosis latent injury development.

Exhibit 6

Product Bodily Injury
Comparison of Claim Count Development Factors

	Development for Months							
	12:24	24:36	36:48	48:60	60:72	72:84	84:96	96:108
Excluding Asbestosis, Food Products, and Battery Manufacturer								
2nd Prior	1.13	1.14	1.06	0.97	1.00	1.01	1.00	1.00
1st Prior	1.10	1.15	1.06	1.00	1.00	1.00	1.00	1.00
Latest	1.18	1.06	1.05	1.03	1.00	1.00	1.00	1.00
Average Annual	1.14	1.12	1.06	1.00	1.00	1.00	1.00	1.00
Cumulative Average	1.36	1.19	1.06	1.00				
Excluding Only Asbestosis								
Average Annual	1.11	1.07	1.03	1.00	1.00	1.00	1.00	1.00
Cumulative Average	1.22	1.10	1.03	1.00				
Total Aggregated Products								
Average Annual	1.14	1.07	1.07	1.00	1.07	1.34	1.20	1.12
Cumulative Average	2.52	2.21	2.07	1.93	1.93	1.80	1.34	

In order to get a better understanding of how we might have been misled without this disaggregation, Exhibit 7 estimates ultimate claim counts and ultimate severities for the nine food products accounts, the battery manufacturer, and all other products, excluding asbestosis. Here you can see how major differences in frequency and severity between accounts within one subline could easily lead an entire reserve analysis astray.

Exhibits 4 through 7 point out that even segregating data by subline may not be enough. This particular data was from a book of business for a primary insurance company; however, we have seen similar situations from a single large conglomerate corporation which has several divisions or operations. In reviewing the development history one must be aware and beware of unusual movements or changes showing up in development patterns. There is often an underlying reason which may lead to the need to disaggregate the data being reviewed.

Exhibit 7

Products Bodily Injury
Indicated Ultimate Incurred Losses

Accident Year	Current Claim Counts	Estimated Development Factor	Estimated Ultimate Counts	Estimated Ultimate Severity	Implied Ultimate Incurred Cost	Average Severity
Nine Food Product Accounts						
1980	510		510	$400	$204,000	
1981	410		410	440	180,400	
1982	38		38	500	19,000	
1983	50		50	500	25,000	
1984	0		0		0	
One Battery Manufacturer						
1982	58		60	6,000	360,000	
1983	222		260	6,500	1,690,000	
1984	131		260	7,000	1,820,000	
All Other Products (Excluding Asbestosis)						
1980	708	1.00	706	14,700	10,407,600	
1981	729	1.00	729	14,100	10,278,900	
1982	742	1.06	787	15,400*	12,120,000	
1983	739	1.19	879	16,800*	14,767,200	
1984	499	1.36	679	18,300*	12,425,700	
Total Products Excluding Asbestosis						
1980			1,216		10,611,600	8,712
1981			1,139		10,459,300	9,183
1982			885		12,499,000	14,123
1983			1,189		16,482,200	13,862
1984			939		14,245,700	15,171

* Projected using a 1.09 trend after 1981.

Differing Approaches to Claims Administration

One of the more difficult adjustments to make in a reserve analysis is an adjustment for change in claims administration. Given the slow payout of large general liability claims under the U.S. legal system, the case reserves set by the claims adjustors account for the majority of incurred loss dollars until 48 months or later in most instances. Philosophies on case reserving differ by insurance company and between independent firms providing claim adjusting services. Exhibit 8 indicates an estimate of the range of emergence and loss development patterns caused by these differences in claims administration. The exhibit is based on incurred loss development patterns we have observed in reserve analysis work for premises general liability. The line labeled **Insurer Average** displays the same factors which were indicated earlier on Exhibit 1. The other four approaches show approximate factors which we have observed resulting from approaches being used by individual insurers or claims adjustor firms throughout the industry.

Exhibit 8

Emergence Patterns and Loss Development Factors
Variation Caused By Claims Administration
For Premises General Liability

Incurred Loss Emergence

	Months After Policy Inception						
Approach	12	24	36	48	60	72	84
Severity Approach	0.33	0.63	0.80	0.91	0.98	1.04	1.02
Insurer Average	0.28	0.53	0.70	0.82	0.88	0.91	0.93
Know All The Facts	0.22	0.52	0.72	0.88	0.95	0.97	0.99
Gradual Recognition	0.27	0.50	0.65	0.76	0.83	0.87	0.90
Optimistic	0.20	0.43	0.57	0.68	0.76	0.81	0.85

Incurred Loss Development Factors to Ultimate

	Months After Policy Inception						
Approach	12	24	36	48	60	72	84
Severity Approach	3.00	1.60	1.25	1.10	1.02	0.96	0.98
Insurer Average	3.58	1.87	1.43	1.22	1.13	1.10	1.07
Know All The Facts	4.65	1.91	1.38	1.13	1.05	1.03	1.01
Gradual Recognition	3.75	2.02	1.55	1.31	1.20	1.15	1.11
Optimistic	4.90	2.35	1.74	1.46	1.31	1.24	1.18

In the **Severity Approach**, fairly strong reserves are set up as soon as the magnitude of the claim becomes known. This results in a faster emergence pattern and generally lower loss development factors than the insurer average approach. It also leads to the interesting situation where at approximately 72 months reserves established by the claims adjustors often exceed the final amount which will be paid. This can be dangerous in that it can lead to overpayment of some claims and increase the total aggregate amount of losses ultimately paid.

In the **Know All The Facts** approach the claims administrator delays establishing initial reserves until the facts are known and initial investigation and medical reports are complete. The idea is to avoid establishing unnecessarily high reserves and thereby avoid making unnecessarily high payments. The result is a delay in the

development of losses up to 24 months. At 24 months the development for this particular insurer about equals the industry average, then exceeds the industry average subsequent to 24 months.

The **Gradual Recognition** pattern is a fairly common pattern, especially with independent adjusters. It starts out close to the industry average, but is slower to recognize needed reserve increases in the middle periods of development. This forces catch up and development factors higher than the industry average in the tail.

The **Optimistic** approach is the most dangerous. This emergence and development pattern is most often the result of lack of knowledge in general liability loss reserving. The result is unfounded optimism in reserve levels, delayed emergence patterns, and high loss development in the tail. In this case, 18% upward development after 84 months.

These five separate emergence patterns are shown graphically on Exhibit 9. This graph makes it clear that not only is it important to know what subline is being reserved and nature of exposures within the subline, but also something about the claims administration of the individual insurer or claims adjustment firm. Failure to recognize such differences and their compounded effect could result in large error in the estimate of ultimate liabilities from which outstanding financial reserves are calculated.

We have now seen that there are several reasons for variations in loss development between accounts:

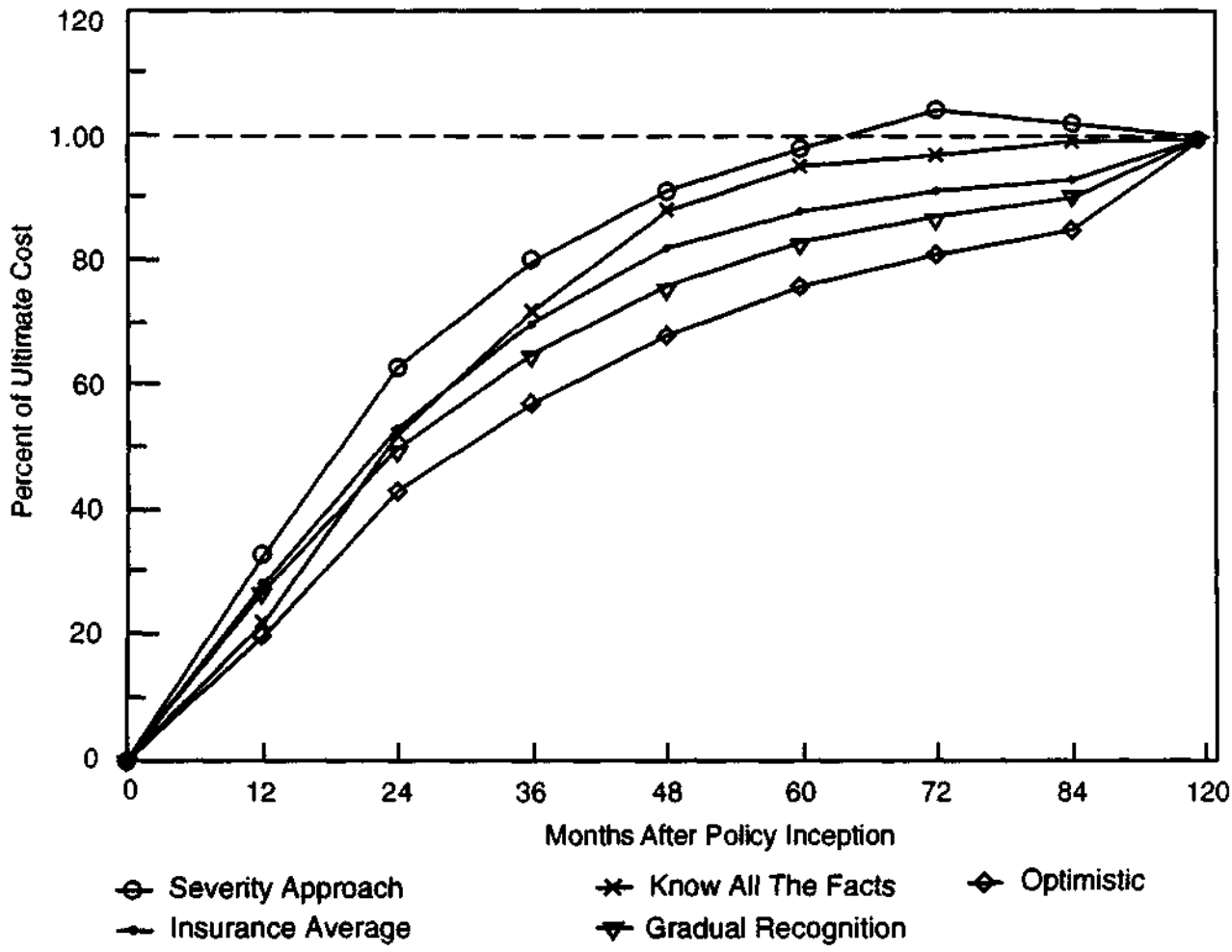
- Subline and coverage
- Exposure differences by product or industry
- Claims administrator

Others are:

- Legal jurisdiction
- Company attitude
- Limits

Exhibit 9

Five Emergence Patterns
For Premises General Liability
Incurred Losses
Variation Due to Claim Administration



Recognizing and Adjusting for Changes Within a Reserve History

Changes which take place within a company or its insurance program may cause the need for careful analysis and adjustment within the analysis based on a single data history. Some of the changes which may require adjustments to analysis are:

- Change in claims administrator
- Acquisitions or divestitures
- Improvement of loss control program
- Unusual frequency or severity
- Change in coverage or limits

In these situations there is no substitute for experienced judgment. It is especially critical in the incurred development method when selecting individual age-to-age development factors.

Selections based on simple mechanical averages may be inappropriate. The example in Exhibit 10 shows the basics of loss development methodology and illustrates the importance of informed judgment allied with basic mathematical analysis. It represents the incurred loss development history for XYZ Corp. and the calculated development factors based on that history.

Exhibit 10

XYZ CORPORATION

General Liability and Products Liability
Incurred Loss Development Factor Calculation

(Losses Limited to $250,000 Per Occurrence
Including Allocated Loss Adjustment Expense)

A. Incurred Losses

	Months After Effective Date							
Occurrence Year	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months
1978				$ 267,467	$ 307,378	$ 254,811	$ 254,348	$246,720
1979			$ 244,296	350,414	366,412	368,906	355,130	355,907
1980		$187,934	282,011	331,049	418,531	438,491	415,738	403,627
1981	$ 89,739	207,486	293,542	373,220	406,427	379,262	403,410	463,055
1982	129,517	272,594	461,392	609,853	685,827	754,176	779,423	685,086
1983	188,106	367,287	625,502	668,383	738,325	868,716	1,057,219	
1984	257,132	602,214	759,729	865,653	979,347	1,107,663		
1985	271,560	473,411	638,004	1,049,562	1,188,271			
1986	262,135	562,996	909,906	1,267,484				
1987	346,062	757,210	1,302,831					
1988	401,420	823,598						
1989	504,560							

Exhibit 10 (Continued)

B. Age-to-Age Factors

	Months After Effective Date							
Occurrence Year	12 to 24 Months	24 to 36 Months	36 to 48 Months	48 to 60 Months	60 to 72 Months	72 to 84 Months	84 to 96 Months	96 to Ultimate
1978				1.149	0.829	0.998	0.970	
1979			1.434	1.046	1.007	0.963	1.002	
1980		1.501	1.174	1.264	1.048	0.948	0.971	
1981	2.312	1.415	1.271	1.089	0.933	1.064	1.148	
1982	2.105	1.693	1.322	1.125	1.100	1.033	0.879	
1983	1.953	1.703	1.069	1.105	1.177	1.217		
1984	2.342	1.262	1.139	1.131	1.131			
1985	1.743	1.348	1.645	1.132				
1986	2.148	1.616	1.393					
1987	2.188	1.721						
1988	2.052							
Average	2.105	1.532	1.306	1.130	1.032	1.037	0.994	
Mid Avg	2.126	1.546	1.289	1.122	1.044	1.014	0.981	
3 Yr Avg	2.129	1.561	1.392	1.123	1.136	1.105	0.999	

The ultimate cost of claims incurred for a specific time period is usually not known until several years after the close of that period. Loss development factors quantify the late developing aspects of certain losses, such as claims involving medical complications unrecognized in early treatment stages or verdicts for litigated claims that differ from the amount reserved to pay the claims. They also account for losses incurred during the policy period but not reported until a later date, commonly referred to as incurred but not reported losses (IBNRs).

XYZ Corp.'s losses incurred during the 1986 accident year are shown in yearly increments from 12 to 48 months after the beginning of that year. Generally, the value of reported losses increases from one evaluation to the next as a result of developing reported claims and substantiated IBNR losses. Age-to-age factors are the rates by which losses developed from year to year. For example, the 12 to 24 months age-to-age factor for the 1986 accident year is 2.148. This number represents the 24 month incurred amount ($562,996) divided by the 12 month incurred amount ($262,136). The 2.148 age-to-age factor means that the value of losses incurred during the 1986 accident year increased by 114.8 percent during the 12 to 24 months interval. An age-to-age development factor less than 1.0 indicates that the value of reported losses declined, possibly due to claims being settled for less than what was reserved.

The exhibit also shows three averages of age-to-age factors from one evaluation to the next, with the "average" being the mean of all age-to-age factors in the column; "midaverage," the point reached after excluding the highest and lowest age-to-age factor in each column; and "three-year average," the average of the three most current factors.

For XYZ Corp., the goal was to select age-to-age factors and calculate loss development factors appropriate to develop losses for 1986, 1987, 1988, and 1989 to their expected ultimate levels. Important judgments are made in the age-to-age factors selection for each column. For example, the last factor shown in each column of historical factors is based on the loss development that took place during calendar year 1989. The 2.052 factor for 1988 indicates the increase in incurred losses between the December 31, 1988, and December 31, 1989, evaluation dates. Likewise, each number up the last diagonal, 2.052, 1.721, 1.393, 1.132, and so on, indicates the change in insured losses that took place during 1989. The first prior diagonal, 2.188, 1.616, 1.645, and so on, indicates changes in incurred losses during 1988.

When selecting factors, it is common to emphasize the most recent historical factors in each column. However, the three-year average indicated factors are significantly higher than those indicated by other averages for the yearly periods between 36 and 84 months. The risk manager and claims administrator indicated that significant reserve strengthening had occurred during 1988 and 1989 and cautioned against applying factors based on the last two diagonals.

If the level or adequacy of reserves had been significantly increased, applying factors generated by those increases would compound them and generate excessive estimates of ultimate losses. This seemed a real possibility. Note that the factors cited, including those in the 24 to 36 months column, appear higher than factors for previous years in the same columns. It was suggested that selected development factors might have to be lower than even longer term historical averages to adjust for reserve strengthening.

High and Low Factors

Although part of this reasoning was solid, further analysis leads to different conclusions. Exhibit 11 indicates those factors that are too low or too high. It is not unusual to see isolated reversals for a single accident year. For example, in 1978 the 48 to 60 months factor is high and the 60 to 72 months factor is low. Conversely, for 1980 the 36 to 48 months factor is low and the 48 to 60 months factor is high. In each case a low factor is immediately offset by a high factor, caused by slight differences in development timing. However, for 1981 to 1985 accident years, something very different and more systematic occurred.

By adding lines to the chart that enclose the groups of low and high factors, a different scenario is defined than the theory of much stronger overall reserves originally presented. High factors in the last two diagonals for occurrence years 1981 to 1985 appear to be a necessary follow-up to the low factors for the same years found in the previous two diagonals. During 1986 and 1987, which are diagonals marked low, incurred losses did not rise as fast as they had historically or would again in subsequent years. Reserve levels must have been held down by a change in reserve philosophy, claims management, or some other action.

Exhibit 11

Incurred Loss Development Factor Calculations
For XYZ Corp. General and Product Liabilities

Age-to-Age Factors

	Months After Effective Date							
Occurrence Year	12 to 24 Months	24 to 36 Months	36 to 48 Months	48 to 60 Months	60 to 72 Months	72 to 84 Months	84 to 96 Months	96 to Ultimate
1978				*1.149**	**0.829**	0.998	0.970	0.922
1979			1.434	1.046	1.007	0.963	1.002	0.934
1980		1.501	**1.174**	*1.264**	1.048	0.948	0.971	0.997
1981	*2.312**	**1.415**	1.271	1.089	**0.933**	1.064	*1.148**	0.878
1982	2.105	1.693	1.322	1.125	1.100	1.033	**0.879**	
1983	1.953	1.703	**1.069**	**1.105**	*1.177**	*1.217**		
1984	*2.342**	**1.262**	**1.139**	1.131	*1.131**			
1985	**1.743**	**1.348**	*1.645**	1.132				
1986	2.148	1.616	1.393					
1987	2.188	1.721						
1988	2.052							
Average	2.105	1.532	1.306	1.130	1.032	1.037	0.994	0.933
Mid Avg	2.126	1.546	1.289	1.122	1.044	1.014	0.981	0.928
3 Yr Avg	2.129	1.561	1.392	1.123	1.136	1.105	0.999	0.937
Selected	2.10	1.65	1.30	1.12	1.06	1.02	1.00	1.00
Loss Development Factors	5.44	2.59	1.57	1.21	1.08	1.02	1.00	1.00

Notes: Losses are limited to $250,000 per occurrence, including allocated loss adjustment expenses.

Bold numbers = Low
Italic* numbers = High

The action in 1986 and 1987 was apparently temporary. Note that the age-to-age development factors for occurrence years 1986 and 1987 (horizontal) are similar to those in 1982. After comparing the factors for 1986, 1987, and 1988 to those for 1979 to 1982, it becomes clear that factors for 1986 and subsequent occurrence years are not high, but instead represent a return to normal patterns.

Two diagonals of historical factors have been distorted low, followed by many factors in the latest two diagonals that were distorted high to compensate. As a result, the goal becomes selecting factors that represent more normal development patterns for XYZ Corp. Note that the factors selected are significantly lower than the three-year average for the four periods between 36 and 84 months. However, they are significantly higher than any average for the 24 to 36 months column. In no case is it appropriate to select factors lower than long-term historical averages; doing so may result in underestimating ultimate losses.

Most loss development patterns are not this difficult to analyze. However, this example of an actual development history shows where thorough analysis by an experienced professional may avoid erroneous conclusions.

Other areas of actuarial analysis where experienced judgment plays an important role include choosing methods to calculate estimated ultimate losses; limiting the effect of large claims when applying loss development and trend factors; and segregating large insureds' data to account for differences in loss development patterns and/or differing frequency and severity characteristics. Other analytical techniques include adjusting for the effect of any acquisitions or divestitures that have different loss severity or frequency characteristics than the total historical operations, and selecting trend factors based on the entity's own data or from reliable government or industry sources.

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