



Claim no. _____

Individual claim reserve for property and bodily injury claims

Name of the injured party: _____ Date of accident: _____

Date of birth: _____

Occupation (a. principal; b. secondary, if applicable): _____

Injuries/prognoses: _____

A. Property Damage total CHF _____

Share of liability _____ % CHF _____

Costs (legal, expert reports etc.) CHF _____

minus advance payment (only for reserved heads of damage!) CHF _____

- future CLAIM COSTS-PROPERTY CHF _____

B. Bodily Injury CHF _____

- Medical and health care

- Concrete loss of income CHF _____

Reserving for severe bodily injury
 Methods and practice in liability
 insurance

Reserving for severe bodily injury

Methods and practice in liability insurance

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One of the most demanding responsibilities in motor vehicle and liability business is setting reserves for outstanding claims; and in doing this, severe bodily injury claims which must be assessed on a case-by-case basis are a particularly important factor. Experience shows that total costs for a seriously injured person can add up to EUR 10 million in certain countries – or even more.

How much, for example, must an insurer set aside to cover a driver who injured a child so seriously that the child will remain disabled and require care for life? Decades may pass before such a claim can be gauged in its entirety and a final settlement made. Yet a reserve must be created at the time the accident occurs, and it should anticipate as accurately as possible the total amount of the ultimate loss.

For this to be done, forecasts drawing on various specialised disciplines must be made. The *legal parameters* of the applicable liability law, which vary from country to country, define the framework for the entire case. *Medical factors* must be taken into account. *Economic data* on inflation, interest and wage trends must also be factored in. Further, *actuarial principles* determine the cash value of recurring benefits such as compensation for loss of income or future nursing costs; and *empirical data* also supplies important inputs for assessing costs.

The complex process of establishing reserves for severe bodily injury is not an exact science by any means. Uncertainties as to how the patient's state of health will develop make it necessary to use hypotheses and estimates that cannot be pulled from any mathematical mould. Yet the insurer needs more than purely rule-of-thumb or best-guess estimates; and indeed, despite all the forecasting problems, he can in fact do a lot more than gaze into the crystal ball.

With this publication, Swiss Re's intention is to bring clarity to the multi-disciplinary thicket that has grown up around the problem of determining reserves for severe bodily injury. We will seek to put the various approaches being used into their proper systematic contexts, and to work out both a theory and a methodology that will be valid beyond national boundaries. In doing this, we hope to provide a useful, practical claims-handling aid that will facilitate the consistent, reliable assessment of reserves for severe bodily injury.

Dr. Thomas Lörtscher
Head, Legal & Claims Services

1 Fundamentals

1.1 Developments, trends, relevance

Various factors have sharply increased the costs of severe bodily injury in the last decade or so. Traffic accidents exemplify this trend.

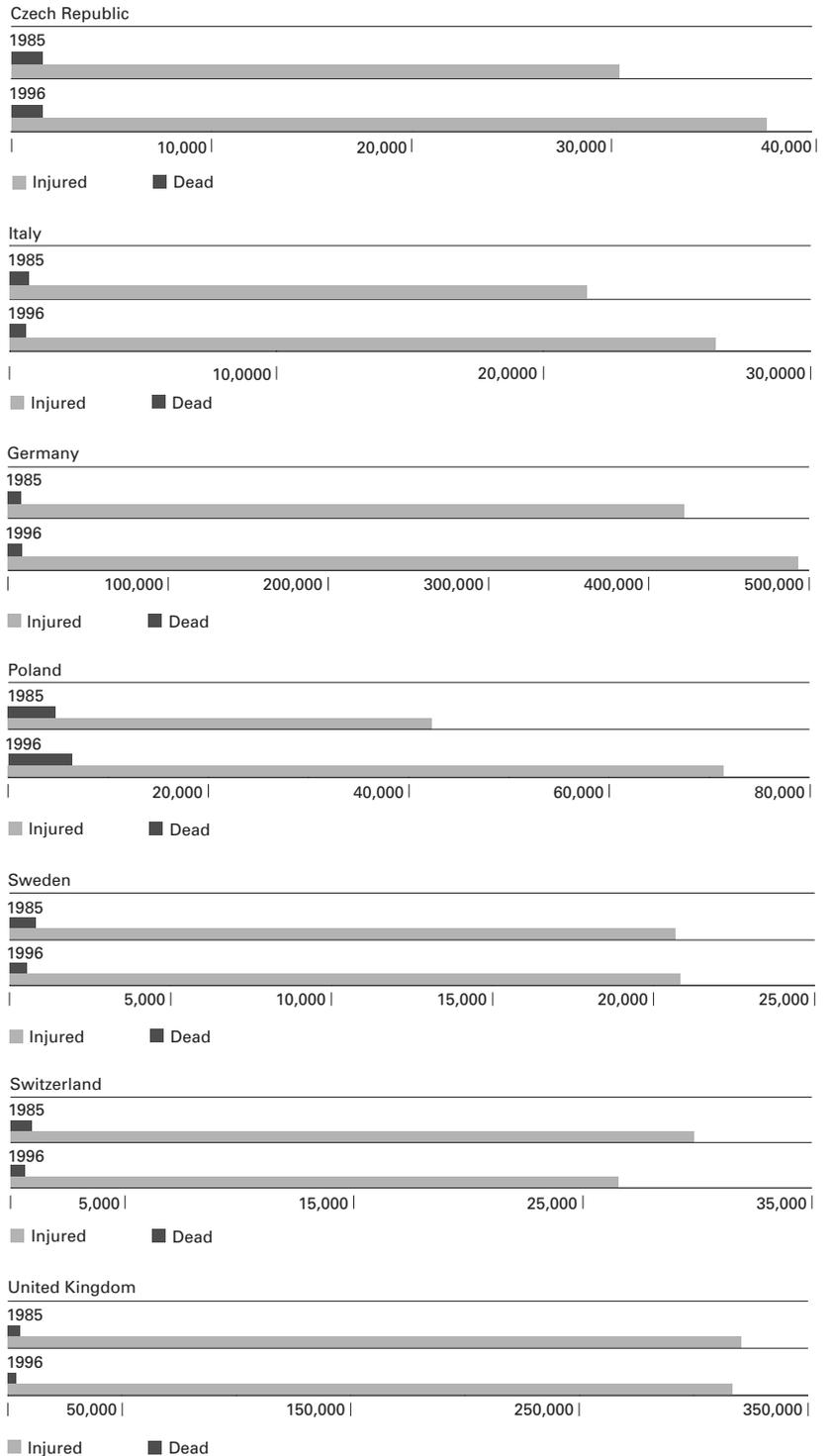
The number of vehicles on the road has been rising steadily. At the same time, a *shift from fatalities to bodily injuries* is evident in the statistics on road accidents and their consequences. One reason has been the ongoing improvement in safety features (seat belts, ABS, airbags, etc) in all vehicle makes and price ranges; but improved emergency services and more efficient treatment at the scene of the accident have also contributed. Accident victims now survive injuries that would have been fatal a few years ago; but they often survive with serious, permanent disabilities.

Another important development in recent years concerns the *cost of treatment and care*. Its disproportionate rise has a particularly strong impact on the seriously injured, who as a rule require intensive, long-term medical attention. Finally, *statistically higher life expectancy*—due in part to improved medical services—again adds to the expense, because the costs must be borne for a longer period of time. Thus for the insurance companies, the larger number of seriously injured people means higher outlays for medical and nursing costs, for loss of income, and for pain and suffering or punitive damage awards.

It is vital for the insurance industry, which must adapt to these conditions, to assess the losses as realistically as possible and in conformity with the law. Swiss Re hopes that this publication will aid liability insurers in adopting a methodical approach to assessing severe bodily injury claims.

The chart illustrates the statistical shift from fatalities to bodily injuries over the last 12 years.

(Trend from 1985 to 1996 derived from the UN's "Statistics of road traffic accidents in Europe and North America")



1.2 The purpose of claim assessment

An insurance company must assess insured events when they are reported for *one of two reasons*: either to assure prompt and equitable settlement of those claims that can be resolved quickly; or for claims that are likely to require lengthy processing and will not be settled by the end of the reporting year, to set aside a reserve and include this amount in the year's financial statement.

First of all, the assessment should ensure that the insurer will be in a position to pay the compensation owed to the injured party at the time a settlement may be anticipated – which may take years. This, in fact, is the purpose of setting aside a reserve, and it also explains why it is necessary to assess the extent of the loss in order to calculate the reserve. Moreover, the claims settlement process should ensure that the injured party receives adequate compensation for the injury, while not profiting from it. Thus, another loss-assessment goal is to compensate the claim as *realistically* as possible.

In assessing a claim, the insurer must always make *assumptions* as to the size of the ultimate loss, because the available information is often inadequate. The necessity of basing his calculation on assumptions harbours the risk of an inaccurate estimate. This means that the claim may be under-reserved with respect to the ultimate loss, or that the compensation may be estimated too high if the injured person's medical condition improves unexpectedly. Because legal requirements and business considerations compel the insurer to estimate the ultimate loss without delay once the injury is reported – and to set aside a commensurate reserve – the insurer has to live with the fact that inaccuracies will occur.

In order to achieve a certain *consistency*, at least, in the assessment of severe bodily injuries despite uncertainty as to the way a case will evolve, insurers must adopt a *methodical approach*. This type of approach is also necessary to ensure that legal cases will be decided in as predictable a way as possible, and this is one of the primary focuses of the present publication.

In this publication, the terms *total loss*, *ultimate loss* or *final settlement value* will always refer to the total amount already paid on a claim, plus any amount still outstanding. The term *reserve* will refer to the amount still outstanding, ie the difference between the total loss and the payments already made.

1.3 Different approaches to claim assessment

1.3.1 Distinction between bodily injury and property damage

In assessing claims, a fundamental distinction is made between bodily injury and property damage. When property is damaged, such as a house, the amount of the loss can be established quickly and accurately and the claim can usually be settled in a relatively short time. In property insurance policies, as a rule, it is the replacement value of the covered objects that is insured. (In the case of real estate, this is the current or appraised value.) Loss assessment can begin without delay after an insured event because the size of the claim is unlikely to change and indemnification is therefore possible unless other problems must be resolved—such as the question of coverage.

Bodily injury cases, on the other hand, require considerably more time. After an accident, the condition of an injured person must first be stabilised. This takes longer in the case of severe injuries than with minor ones, and can even go on for years. Only afterwards is it possible to quantify accurately the loss represented by a severe bodily injury, and indemnify it on the basis of solid information, taking future costs into account.

1.3.2 Distinction between small and large losses

Another fundamental distinction relates to the severity of the loss and the size of the impending indemnity payment. There is no objective, quantitative dividing line between large and small losses. The boundary is likely to vary from one insurance company to another, depending on its financial resources and the composition of its portfolio. For a small insurer, even a few thousand euros might qualify as a large claim, while a major insurer could easily set the threshold at a hundred thousand euros. Every insurance company must analyse its portfolio carefully in this regard.

Minor losses, almost by definition, occur frequently and thus are also referred to as *high-frequency losses*. This large number of similar losses (minor damage to cars in collisions, for example) produces a “homogeneous loss profile” with loss experience figures that can be analysed *statistically* and expressed as average, per-claim values. The *law of large numbers* comes into play, which states that as the number of events increases, the average damage amount per claim will approach closer and closer to a definite value. This principle makes it unnecessary to assess each new minor loss individually: it is sufficient to set aside reserves in the amount suggested by the statistical averages. When this approach is used, the risk that claims will settle higher (or lower) than predicted remains within narrow bounds, and even these small deviations tend to balance out over time.

The situation for *large losses* is different. Simply because they have a lower frequency than small losses and tend towards a non-homogeneous loss profile, the law of large numbers cannot be applied. Because loss experience is insufficient to provide a statistical basis for claims assessment, the application of a standard average would usually result in large discrepancies between the ultimate loss as originally calculated and the actual settlement. Thus, it is imperative to use a case-based method in assessing major losses: this is the only way to avoid large differences between the reserve and the ultimate loss amount that must finally be paid.

1.3.3 Conclusions

Severe bodily injuries qualify as major losses. Their characteristics—low frequency and the lack of a homogeneous loss profile—mean that they are unsuitable for statistical analysis. For that reason, *individual claim assessment* is vitally important.

1.4 Severe bodily injuries

1.4.1 Medical and economic aspects

Bodily injury can be described as an impairment of physical or psychological integrity. Assessments of the severity of an injury can vary considerably depending on the professional perspective from which they are made. From the insurer's point of view, the seriousness of an injury is defined in terms of cost. The more expensive the injury will be for the insurance carrier, the more severe it appears. Physicians, psychiatrists and psychologists, on the other hand, look at the *degree of trauma*. The severity of the injury depends on the degree of physical or psychological damage suffered by the person (fractures, damage to organs, psychological manifestations such as anxiety or depression).

The insurer assesses bodily injury on the basis of information provided by the physicians and psychiatrists consulted. Thus the costs are generally consistent with injury severity, though differences can arise, particularly in the assessment of psychological symptoms.

Severe bodily injuries include particularly the following: paralysis due to spinal cord injury (paraplegia), cranio-cerebral trauma, amputation, blindness, slow-healing multiple fractures, serious internal injuries, severe burns and—in some cases—long-term psychological damage. These injuries are assigned a high degree of severity both in medical and economic terms.

1.4.2 Most costly individual injuries

The list below shows the most costly individual injuries known to Swiss Re from research in ten countries.

Ultimate loss (ie amounts paid plus reserves outstanding), in millions

	Euro	Local currency March 1999
Germany	15.3	(DEM 30)
Austria	1.5	(ATS 20)
Switzerland	9.4	(CHF 15)
Netherlands	1.1	(NLG 2.5)
Belgium	5.7	(BEF 230)
France	4.0	(FRF 26.3)
Italy	2.2	(ITL 4200)
Spain	3.0	(ESP 500)
United Kingdom	13.2	(GBP 8.9)
USA	28.2	(USD 30.9)

1.4.3 Degree of disability

Reflecting the differences between the economic and medical perspectives, insurers and physicians may differ in assessing the degree of disability for the same injury. In other words, the medical and the economical degree of disability may not correlate. It is possible for a person to be considered 100% disabled in *medical* terms, yet only qualify for partial disability payments in view of his residual capacity to work: his *economic disability* may be classified as, for example, 50%. The opposite case is also conceivable. Economic factors may mean that someone with a 50% disability, medically speaking, is completely unable to find employment. This situation occurs primarily in difficult times when the job market is tight. In such periods, people with small disabilities often have great difficulties finding a position corresponding to their abilities—even when their medical condition would enable them to work part-time.

Permanent psychological trauma also counts among the most serious cases. Particularly when such disorders appear after an accident, they can result in total disability even if there is no medically verifiable, physical cause. Psychological manifestations following automobile accidents with whiplash injury are a typical example.

The social setting must also be considered. In an economic slump, there is a greater tendency for accident victims to see bodily injury as an opportunity to solve their financial problems once and for all. Nor are all such cases spurious. For the proprietor of a small business under competitive pressure or in the midst of a recession, an injury can have serious business repercussions. In the worst case, the owner's company may have to close even though the owner himself is not totally disabled. When professional or personal problems crop up in the aftermath of a serious accident, total disability is more likely to be the outcome than when the injured person's occupational and personal situation remain intact.

1.5 Theoretical framework

Basis	Concepts and interrelationships		Description
Law	Liability law (principles) <i>Restitutio in integrum</i> (eg Swiss civil law)		Determines the (maximum) extent of compensation required under liability law
Law, legal precedent, claims settlement practice, conventions	Claim assessment (valuation) Concrete (capital value from present value tables [Switzerland])		Various methods of gauging compensation
Law	Determination of compensation (valuation) (Assessment of the liability situation)		Determines portion of damages to be compensated
Law, established practice	Settlement of claim (modalities) Lump sum		Different forms of payment
Internal guidelines	Reserving philosophy (assessment) Reserving for ultimate loss (prudent, long-term)		Determines size of predicted final settlement or reserve
Internal guidelines	Reserving methods (modalities) Individual (large losses)		Different reserving methods
Experience, negotiations	Settlement philosophy (assessments) Realistic, fair compensation		Determines approach to injured party

1.6 Forecasting problems

The initial assessment of a claim must often be made at a time when the available information is insufficient and the relevant facts are still far from clear. The insurer cannot avoid making assumptions as to the size of the ultimate loss: in other words, he must try to *forecast* future developments.

With small, frequent types of claim that are basically similar, the insurer can set the initial reserve using a flat rate derived from statistics and other empirical data. However, where large losses such as severe bodily injury are concerned—which occur more rarely—the loss experience necessary to develop reliable statistics and reserving formulas is not available. Thus, the insurer must carry out the initial assessments of severe cases on an individual basis. Even later, when working towards a final settlement, the insurer must rely on medical prognoses of the injured person's future condition and estimates of future health care costs.

Yet even here, it would be impossible for the insurer to form hypotheses about future losses without empirical data. Mortality and disability tables, medical studies, and a knowledge of previous claims experience can be a definite help. The insurer who does not base his estimates on solid knowledge runs the risk of ending up very wide of the mark when the actual settlement amount becomes known.

Particularly with regard to bodily injury, it is necessary to have an idea of the way the injured person's medical condition, his earnings and need for care will develop. Even if the insurer receives additional information during the settlement process (such as medical reports) making it easier to give a more accurate picture of the patient's progress, and allowing him to modify the ultimate settlement value accordingly, his assumptions as to the injured party's state of health or income prospects will always be subject to a certain degree of uncertainty: they will always remain hypothetical.

Thus with every prognosis, the insurer is forced to draw conclusions about the future based on information about the past—and formulate these as assumptions. The necessity of basing claims assessments on assumptions leads inevitably to inaccuracies. Insurers know this, and in order to achieve a certain consistency at least, they adopt a basic, standard policy on the way they make their forecasts. At the strategic level, this is reflected primarily in a company's *reserving policy* (or *philosophy*), which is regularly reviewed by senior management. At the practical level, it is expressed in the guidelines used by staff in assessing claims, setting reserves and negotiating settlements. Depending on the philosophy chosen, the losses will be assessed in a way that is optimistic, prudent (realistic), or pessimistic.

1.7 Reserving and discounting

1.7.1 The purpose of discounting

The liable party—or the liable party's insurance company—indemnifies the injured party for damages incurred, such as loss of income or nursing care costs. Compensation is customarily expressed as a monthly or annual sum of money—an annual annuity of EUR 100,000, for example—that combines the various periodically recurring items. But the insurer needs an estimate of how much the claim is going to cost him in toto: his ultimate loss. He thus *discounts* or *capitalises* these periodic future payments to determine the monetary sum that is their present equivalent: to determine, in other words, the capital he needs on a given date to cover the recurring payments he will be obliged to make later.

Insurers use *present value factors* to determine, for a specific claim, the amount of capital that is the present equivalent of the periodically recurring amounts that will be paid to the injured party in the future.

This calculation is made in any case, no matter whether the final settlement will take the form of an annuity or a lump sum. With an annuity, the insurer discounts the annual amounts he will be obliged to pay to the end of the annuity term in order to set aside a suitable reserve; but even if the claim is to be settled with a lump sum, the *hypothetical* recurring payments are discounted to give an indication of an appropriate amount—in present capital—for the single payment.

Thus the present value method is quite useful from the insurer's perspective, as it gives him a basis for setting aside a reserve from the premiums he received in the year of the accident. Later, these reserves, which ideally will be equal to the amount of the ultimate loss, will allow him to pay the losses attributable to that year. From the injured person's perspective, this calculation is of interest only where the total compensation is to be paid in a lump sum: if benefits are to be received as a monthly or yearly annuity, present value considerations are irrelevant to the injured party.

1.7.2 Present value tables

In many countries, bodily injury claims are usually discounted with the help of *present value tables* (see Appendix), some of which are based on statistical average life expectancies and others on retirement age. The tables contain *factors* which can be multiplied by the amount of the yearly annuity to obtain the present value (equivalent capital sum) at the time of the calculation. These tables are useful for determining the value of future, recurring payments arising from an insured event. The present value represents the funding required to pay the annuity.

$$\text{Present value of an annuity} = \text{Annuity amount} \times \text{Present value factor}$$

In liability law, present value tables are used mainly to quantify disability and loss-of-earnings payments. Judges also employ present value tables as a guide in setting damages, although most legal systems do not consider them binding: the amount of the settlement is usually left to the discretion of the court. Nevertheless, these tables provide judges with an approximate value for determining a settlement, and thus enhance the individual's legal security.

To look up a present value factor, certain information is needed. It is necessary to know the length of time for which compensation must be paid, as well as the *frequency of the payments*: for example whether they are to be paid monthly or annually. One must also decide on a *discount rate*. The present value factor corresponding to this information is multiplied by the *amount* of the periodic payment or annuity. This amount may change over time due to inflation or rising incomes, though laws on the injured person's right to claim an adjustment on such grounds vary from one system to the other.

1.7.3 The principle of discounting

1.7.3.1 Calculating lump-sum compensations

To understand how the present value of a future stream of periodic compensation payments is calculated, it is essential to understand the principle of *discounting*. In a lump-sum settlement (for example) the injured party is paid a single sum of money instead of an annuity which he would normally receive only in the course of time. This settlement is less than the sum of the annuity payments. This is because the recipient is expected to invest the money in an income-generating instrument: a savings account, shares or bonds.

Thus, the lump-sum settlement represents the total of the hypothetical annuity payments *minus* the return that the recipient is expected to earn by investing the settlement at the assumed rate of interest. This fulfills the aim of compensating the injured party adequately without enriching him.

However, an insurance company and a private investor invest on a different scale. The insurance company, with its large volume of invested funds, should be able to earn more than the injured person, who not only invests a much smaller amount but will also tend to place the money in safer investments paying a commensurately lower return. This should be considered in making interest rate assumptions.

Also, the positive effect of investment earnings is countered by inflation. We must not forget that the interest rate which the injured party earns is reduced by the inflation rate, and that the real rate of interest he receives is only the difference between the two. It thus appears theoretically correct to adopt the *real interest rate* for discounting purposes.

Insurers in Germany use another system for calculating present value: the discount rate is chosen with no allowance for inflation, and reflects only the potential income earned on the cash sum paid to the injured person. Then, a so-called *dynamikzuschlag* or “dynamic surcharge” is added: this is designed to compensate for the future decline in the value of money (inflation) on one hand, and on the other for future wage trends plus the injured party’s career development. Since the discount rate to be applied is prescribed by neither law nor custom, practice is not uniform. For a discount rate of 5%, for example—representing the expected interest yield—a dynamic surcharge of 1.5 to 2% might be added for each point of the present value factor. This can work out as follows:

A 45-year-old injured person is to receive an annual income of EUR 100,000 extending over a period of 20 years (ie until his retirement pension begins). The German present value table—for a 20-year annuity at a 5% discount rate—gives a factor of 12.075. Multiplying the income by this factor yields the discounted capital, the present value of the annuity. Thus:
 $\text{EUR } 100,000 \times 12.075 = \text{EUR } 1,207,500$
A value of 2% is chosen for the “dynamic surcharge”.
This, too, is multiplied by the factor, giving:
 $2\% \times 12.075 = 24.15\%$
The discounted capital is then increased by the percentage for the dynamic surcharge. We then have:
 $\text{EUR } 1,207,500 + 24.15\% \text{ surcharge} \approx 1,500,000$

The higher the interest rate, the lower is the amount of compensation paid to the injured person. The dynamic surcharge is intended to equalise things for the injured party, and should therefore increase as the selected discount rate increases. Whichever approach the insurance company uses to calculate the present value, there should be no difference in the result for the injured person.

1.7.3.2 Calculating reserves

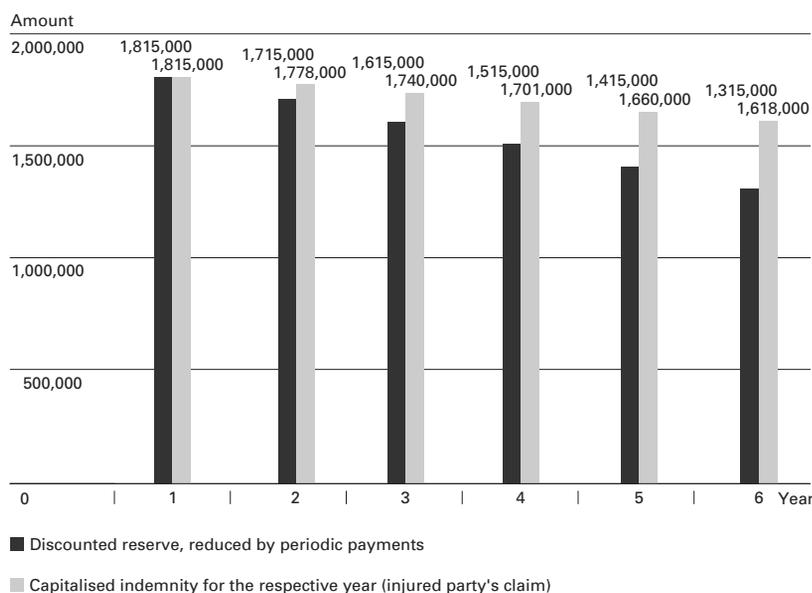
An insurer's motives in discounting his estimated ultimate loss when calculating a reserve must be clearly distinguished from his reasons, explained above, for discounting future indemnity payments in calculating a lump-sum payment. In calculating reserves, it is in the insurance company's interest to discount the ultimate loss it expects to pay at the highest rate it feels comfortable with. This reduces the amount of the reserve, tying up less of the company's capital. However, discounting is only justifiable if claims can indeed be paid on the presumed settlement date as planned, or if the interest on the reserve is compounded, ie the interest is reinvested in the reserve. Otherwise, funding will be insufficient to cover the periodic payments (or, if the claim is settled, the similarly discounted lump sum).

This is illustrated in the following section.

At the time of the first assessment (Year 1 of the chart), the amount computed for the reserve corresponds simply to the claim amount that is reasonably to be expected. The present value tables generally used in Switzerland are (still) based on a discount rate of 3.5%. The underlying assumption is that the injured person will be able to earn that rate of real interest (nominal interest rate minus inflation) if the compensation is paid immediately as a lump sum. This equates to a factor of 18.15 for an annuity term of 30 years. If the annual compensation of EUR 100,000 for loss of earnings is multiplied by this factor, the result is EUR 1,815,000. This is also the amount the injured party will claim and collect.

The situation looks different when settlement for loss of income can only be made later, for example in the sixth year. In this case, the reserve as originally calculated will have been reduced by five periodic payments, and now amounts to EUR 1,315,000 (ie EUR 1,815,000 minus five annuity payments of EUR 100,000). Nevertheless, representatives for the injured party will begin negotiations with a demand of EUR 1,618,000, because the present value factor for the accident victim, now 35 years old, has only declined to 16.18, and EUR 100,000 multiplied by 16.18 is equal to EUR 1,618,000. This is EUR 303,000 more than the remaining reserve! However, this difference arises from the fact that the insurance company did not reinvest the interest earned to Year 6 in the reserve, but added it to its business result. It is for this reason that the reserve is insufficient to cover the total compensation amount. The need for a subsequent increase in the reserve does not mean the insurer is overpaying the loss: the company earned interest for the first five years on the funds it had laid aside, and this had a positive impact on its income statement (though not on the reserve!).

1.7.3.3 Discounted reserves and outstanding claim amounts for delayed settlements



Basic assumptions:

Annual lost income: 100,000
 Age of injured party: 30
 Term of annuity: to age 60
 Mortality tables used: Switzerland
 Interest not considered

1.7.4 Past loss, future loss

When carrying out the present value calculation, a basic distinction is made between past loss and future loss, with “past” and “future” being determined by the time at which the insurer assesses the ultimate loss.

The *past loss* is a definite amount because it is composed of sums that have already accrued (loss of earnings to date, or hospital and treatment costs). This amount *must under no circumstances be discounted* because at the time of the settlement the company will have to pay these in full plus any interest owed.

In determining the *future loss*, a distinction must be made between two phases: a) the future losses likely to have accrued by the time of settlement and b) those accruing after the settlement date. The pre-settlement segment of the future loss must not be discounted, because an insurance company does not normally augment the reserve with the interest it earns, but instead lets the interest flow into its income statement. Discounting here would reduce the reserve as originally calculated by the total amount of interest that can be expected over the period: thus, not enough money would be available when the time came to pay the claim. The segment of future losses arising after the predicted settlement date, however, *can* be discounted, because it is assumed that the injured party will invest the disbursed and discounted sum at interest, thereby recovering the amount discounted.

1.7.5 The influence of discounting on the business result

Discounting the reserve for a *future loss from the presumed date of settlement* should have no adverse effect on an insurance company’s business result, because the discounted portion of the reserve will correspond to the actual value of the settlement. If, on the other hand, the insurer were to discount the total loss—that is, both past and future, and from the very beginning—this would reduce the reserves posted in the profit and loss account, and they would not correspond to the true future losses. The result would be to make the business result appear in a better light, violating the principle that the balance sheet should present a true and fair picture of the company’s financial position.

1.8 Reserving and claim settlement

For every reported insured event that has not been settled by the end of the business year, the insurance company must estimate the ultimate loss and set aside a reserve for this amount. This *internal procedure* is known as *reserving*.

Claim settlement—in the sense used here—describes a procedure between the *insurer* and the *injured party*, ie determining and paying compensation to the rightful claimant in order to close the claim. For *severe bodily injuries*, the assessment and reserving phases are particularly important because rapid, conclusive assessment of these losses is not possible owing to their complexity and the unstable medical condition of the injured person so soon after the accident: thus the loss cannot yet be settled by the end of the business year.

The assessment of severe bodily injury from the reserving and the settlement perspectives

	Reserving	Settlement
Purpose	This calculated amount accurately reflects, for accounting purposes, the business process of reserving for a loss	The calculated amount serves as a basis for negotiations held with a view to settling the claim, either globally or in part (individual heads of damage)
Criteria	Prudent, realistic	Realistic, fair
Value	Amount of the ultimate loss: theoretically, it is greater than or equal to the amount of the settlement offer	Amount of the settlement offer (if reserving was done correctly) should not exceed the ultimate loss amount
Object	To cover the total loss, all heads of damage included	May possibly include only individual heads of damage
Time	Immediately after the claim is notified	The claim must have "matured" to a certain extent
Perspective	Reserving should be done from an "abstract, underwriting perspective"	Assessment should include subjective elements such as the negotiation climate, or the claims handler's experience and "feel"

1.8.1 Reserving

Every country has its own regulations covering the degree to which a liable party must carry losses inflicted on a third party. These principles can also vary, however, from jurisdiction to jurisdiction. Swiss civil law, for instance, is guided by the principle of *restitutio in integrum* or *full restitution*. In contrast, the German road traffic law sets a financial ceiling on liability. If the damage exceeds this amount, the injured person is only entitled to *partial* compensation. Legal systems can essentially be classified into these two groups: one providing for partial compensation, the other demanding full indemnity.

The insurer's reserving practice for individual losses should be guided by these legal precepts, since the ultimate loss can never exceed the maximum compensation provided for by law. Damages for which a larger reserve is made are basically counted as *over-reserved*. If a lower predicted final settlement value is applied, the loss is *under-reserved*. Depending on the legal framework, there may be considerable leeway when it comes to determining how much is owed under the law, and therefore how much must be reserved.

Reserving policy also must take the possibilities of subrogation into account. In countries where the damage is to be assessed and compensated according to a "concrete" system – ie based on the actual cost of the case at hand – the law of liability limits the recovered damages to the actual, effective economic loss, thus protecting against overcompensation or "unjust enrichment". In countries with "abstract" compensation systems, however, overcompensation

is possible: a number of parties, for example, may bear joint and several liability for the claims of the injured person. Thus, the question of how to coordinate compensation within these indemnification systems does arise. In some countries, the problem is governed under laws of subrogation.

When an injured person pursues a claim for compensation of the entire loss against one of a number of jointly and severally liable parties, that liable party must pay the entire indemnity; but he can then exercise his right of recourse to recover partial damages from the other liable parties. However, in calculating the ultimate loss under a concrete system, an insurance company should not reckon on recovering damages through recourse to other liability-sharing parties unless these recoveries are possible both in law and in fact: that is, where the shared liability is not in dispute *and* the parties are able to pay.

In this connection, the distinction sometimes made in practice between the *subrogated amount* and the *direct loss* does not play a role in the liability insurer's ultimate loss assessment in countries such as Austria, Germany and Switzerland where the social insurance institution has recourse to the liability insurer for social insurance benefits paid. The company providing liability cover in such cases remits a share of the compensation (the subrogated amount) to the social insurance institution or subrosee; and the rest of the claim, the so-called direct loss, to the injured party. In countries with Scandinavian-type systems, on the other hand, the distinction between the subrogated portion of the claim and the direct loss is decisive, because the social insurance institution has no right of subrogation and the liability insurer is only responsible for the direct loss, defined as the difference between the total loss and the portion assumed by the social security scheme. The final settlement value in such cases thus corresponds to the direct loss.

One purpose of reserves, from the standpoint of business economics, is to make sure funding is available for subsequent claims settlements. The estimated ultimate loss should be as close as possible to the real settlement value: deviations, whether positive or negative, should be avoided. To achieve this, the insurer must rely first of all on previous loss experience, which provides a basis for assessing the probable size of the ultimate loss and the reserve to be set aside.

1.8.2 Settlement

Settlement is the process through which the insurance claim is closed. The point in time at which the insurer is able to begin working towards a final settlement depends primarily on the type of damages concerned. For property damage, the settlement process can generally begin in a matter of weeks or months, because replacement values determine the size of the loss and the claim cannot be expected to evolve further. In cases of severe bodily injury, however, it is necessary to wait until the medical condition of the injured person has stabilised, and this may take years. Only then will the informa-

tion necessary for the settlement process be available, for an accurate valuation of the loss requires a reliable prognosis of the injured party's future health status. It can be seen that loss assessment poses less of a problem in the settlement phase than at the time the initial reserve was made.

Negotiations between the insurer and the claimant or his representative should result in a settlement that is fair to both sides within the legal system. If the loss was assessed prudently and realistically prior to the negotiations, the actual settlement will be on the same order of magnitude as the predicted value for which the reserve was made (subject to unforeseen developments).

In principle, a settlement may also be based on a court decision, for a negotiated compromise is possible even after a judgement; however, it only makes sense if the "losing" party has good chances of winning on appeal.

1.8.3 Organisational aspects

In most insurance companies, a Claims Services department is responsible both for reserving and settlement. Thus, it is often the same person who makes the ultimate loss estimate and later handles the settlement process for a given claim. This can present problems if claims assessors become too optimistic in their desire for a favourable settlement, though it has the advantage that the case officer is familiar with the event concerned and does not have to hastily familiarise himself with the case in the settlement phase. While this advantage should not be underestimated, the insurance company should be aware of the pitfalls of overlapping responsibilities, and make sure the necessary control mechanisms are in place.

1.9 Abstract and concrete valuation methods

The insurance carrier is not free to choose the method of assessing injury claims. As a rule, the regulatory framework governing the scope of damages is determined by the country in whose jurisdiction, for example, a traffic accident occurs (Convention on the law Applicable to Traffic Accidents of 4 May 1971). Some countries use the abstract (standard scales) method of loss settlement while others use the concrete, specific-case method.

1.9.1 Abstract valuation method

With the abstract valuation method, compensation is not geared to the actual monetary loss incurred under a head of damage—such as loss of income, nursing and medical care costs, or non-financial losses. Instead, legally established standard amounts are applied. Additional correction factors for other considerations including high income brackets, severe disability or serious non-financial losses do narrow the gap; but by no means do they guarantee complete indemnification of the actual damages arising from a specific case.

Thus, the *inherent danger* in this method is that the injured person may be either inadequately compensated, or else over-compensated, because the valuation method was not tailored to his or her individual case.

The obvious advantage of this method lies in the legal security it provides. As soon as the injuries suffered have been allocated to the appropriate categories by a physician, setting the amount of the indemnity is a relatively simple matter. Although there is still some room to manoeuvre on the basis of correction factors, the legal security and efficiency of assessing bodily injury have increased greatly since this system was introduced.

1.9.2 Concrete valuation method

The *concrete* method of loss assessment is guided by the facts of the individual case. It is based on the actual damages suffered. In Switzerland the calculation is based on the so-called *differenztheorie*, or “differential” indemnity principle. Here, the material loss that entitles the injured party to compensation is equal in worth to the difference between the current state of the injured party’s fortunes following the accident, and their state had the injurious event not occurred. This theory is not applicable to compensation for pain and suffering.

1.10 Assessment principles

The *indemnity* actually paid to the injured party must be distinguished clearly from the assessed value of the loss. On one hand, the two may differ because the sum worked out using the assessment method is limited by legal stipulations, so that only a certain portion is indemnified (partial restitution). Under concrete valuation methods as well, the injured party may only be entitled to partial compensation: for example where he himself shares liability for the accident.

In summary, we may say that *assessments* should be prudently realistic. They should aim at setting a reserve that will cover later compensation payments without being so high as to represent an unnecessary burden to operations. When at a later date the claim enters the *settlement* phase, considerations of what is realistic or prudent move into the background; here, the only goal should be to arrive at a settlement that provides fair compensation, no more and no less, to the claimant.

2 Assessing claims for the purpose of setting reserves

2.1 Reasons for assessing the ultimate loss and the reserve

2.1.1 Financial statements and the posting of reserves

Reserves for outstanding claims are based on an insurance company's anticipated losses. A distinction must be made between reserves set aside for individual claims, whose size is determined by empirical experience and the details of the specific case, and loss reserves for entire portfolios, which are calculated using actuarial methods. For all outstanding claims, reserves are set aside in the full amount of the anticipated payment.

The reserve figures used in the company's account books must reflect the principle that the balance sheet presents a true and fair picture of the company's actual financial condition. Reserves appear in the annual report on the liability side of the balance sheet under "provisions for claims outstanding" (or "claims reserve", or "reserves for outstanding claims"). They must be balanced by an equal amount of assets posted on the other side of the balance sheet. Interest income earned by the company on these positions is not posted back to the reserves but flows into "accrued interest" (or "investment income"). As this income does not figure in loss or reserve calculations, it follows that reserves are not to be discounted. Reserves for individual claims are thus constant in the balance sheet—as long as no partial compensation is paid or adjustment is otherwise required.

This arrangement applies in most countries. An exception is France's treatment of cost-of-living-corrected (indexed) annuities. In accordance with the decree of 20 December 1996, the reserves for open annuities must be recalculated at the end of every year on the basis of prescribed mortality tables and legally established discount rates. Thus, after annuitisation by the claims service, some insurers now transfer these reserves to a special annuities unit, so that interest accrues to the assets composed of the aggregate annuities.

The table below shows the accounting mechanisms involved, from initial reserving through claim settlement.

Parameters: Loss occurrence: 1990; Estimated ultimate loss: 1 million; Payment in each subsequent year: 100,000; Settlement in sixth year.

	Effect in 1990	Effect in first subsequent year	Effect in year of settlement (sixth subsequent year)
Balance sheet	<ul style="list-style-type: none"> The claim raises company's debt by the amount of the ultimate loss, ie the amount of the reserve (1,000,000) 	<ul style="list-style-type: none"> Current assets reduced by the amount of payments made (-100,000) Debt occasioned by the loss is now equal to the remaining reserve, ie the estimated ultimate loss minus payments made (1,000,000 - 100,000 = 900,000) 	<ul style="list-style-type: none"> Current assets reduced by the amount of the outstanding payment (-500,000) Debt occasioned by the loss reduced to zero (1,000,000 minus 5 payments @ 100,000, minus 500,000 = 0)
Profit and loss account	<ul style="list-style-type: none"> The annual result is reduced by the reserved amount, ie the estimated ultimate loss (-1,000,000) 	<ul style="list-style-type: none"> No effect, as the entire impact was included in the 1990 accounts 	<ul style="list-style-type: none"> No effect, as the entire impact was included in the 1990 accounts
Cash flow statement	<ul style="list-style-type: none"> No effect 	<ul style="list-style-type: none"> Cash out in the amount of the payment made (- 100,000) 	<ul style="list-style-type: none"> Cash out in the amount of the outstanding payment (- 500,000)

2.1.2 Reinsurance

The insurance company must report claims to its reinsurer. As soon as the insurer receives a claim notification, it performs an initial damage assessment and sets aside ("reserves") the appropriate amount. Depending on the terms of the reinsurance treaty, the primary insurer may be obliged, for example, to report any losses that exceed its retention, or that amount to 75% of its nominal retention, or that—regardless of size—fall into certain categories (such as very serious brain injuries with coma lasting more than three days; very serious spinal injuries, particularly quadriplegia; and cases where the injured party is a US citizen or court proceedings are to be held in the US). Because the insurance companies' initial assessment of the ultimate loss usually forms the basis for the reinsurer's reserves, this assessment and the initial reserves set by the insurer are of great importance to the reinsurer.

2.1.3 Reserves and allocation of funds

In some countries, primary insurers must make a large, lump-sum payment when settling (closing) a claim. The size of this payment, which is often based on the discounted present value of future periodic annuity payments, is also influenced by the course of settlement negotiations.

In most countries, however, periodic annuity payments are the rule: ie a series of partial payments is made to the injured party. Claim assessment with the aim of allocating a reserve thus also serves to set aside in good time the funds needed for annuities—or for lump-sum payments—and to segregate these funds in the company accounts.

2.1.4 Rating

The loss profile for an insurance year is of great significance to a primary insurer in rating his policies. Premiums for the ensuing year are based in part on previous claims experience and thus on the total losses. However, the ultimate loss estimated for severe bodily injury claims (liability claims which frequently take ten or more years to settle) must be factored into the statistics and thus into rating models. This implies a certain amount of uncertainty inasmuch as the ultimate loss cannot be definitely known until the current accounting year is long past; on the other hand, leaving all reported but still outstanding claims out of the statistics would distort the basis for calculating future premiums even more.

If an insurer estimates the ultimate loss too optimistically when assessing individual claims, and sets the reserve too low, the effect on the company's finances is twofold: the annual report will not accurately reflect the company's actual financial condition; and both the primary insurer and the reinsurer will collect too little premium in the following year because their rates will be based on an incorrect loss profile. This will inevitably worsen the technical result. When an insurer underestimates the ultimate loss and sets aside insufficient reserves, he is cutting his own throat, and through the proportional reinsurance treaty, it negatively affects the reinsurer's result as well. Though an insurance company may tie up less capital this way, and will thus have more underwriting capacity at its disposal (higher equity ratio), the effect is not usually enough to offset the negative impact on its underwriting. Though excessive reserves may tie up too much capital—which is undesirable—underestimating the ultimate loss is ruinous in the long run, and must absolutely be avoided.

2.1.5 Insurance regulation

In nearly all countries, insurance companies are subject to governmental supervision. The intention behind such regulation is to protect the consumer.

Besides licensing insurance companies, approving their business plans and other tasks, a supervisory authority's main duty is to protect policyholders and injured parties from an insurer's becoming insolvent. Thus it monitors company solvency and ensures that the insurer is at all times in a position to fulfil its obligation to cover an insured event. This is another reason why the insurer must assess a claim's ultimate loss as soon as possible after it is reported, and create the necessary reserves.

2.2 Reserving philosophy, reserving policy

An insurer should set aside the initial reserve as soon as he becomes aware of a new claim, even if the data for a preliminary assessment are not available at that time. At this early stage the insurer must use assumptions to forecast the future development of the injury. In order that such forecasts will be made according to the same fundamental principals and be consistent within the company, senior management should establish a philosophy or policy as the basis for assessing, reserving and settling claims.

2.2.1 Approaches to assessment

There are various approaches to assessing damage for purposes of reserving. We can distinguish between *pessimistic*, *prudently realistic*, and *optimistic* assessments.

As a rule, both pessimistic and optimistic approaches will lead to a substantial difference between the predicted ultimate loss and the real settlement. The insurer should thus neither use worst-case scenarios nor base his estimate on hopes that the claim will develop for the best. *Any* difference between the reserve and the ultimate loss, whether positive or negative, is unwelcome, and must be kept as small as possible.

Swiss Re thus favours ultimate loss assessments that are prudently realistic as the best method for minimising this difference. This is particularly important with severe bodily injury claims, where the risk is much greater that the loss will cost far more than originally estimated, due notably to the lengthy settlement period. Also, in contrast to small (high-frequency) claims, it is much less likely that one large claim's positive development will balance out the negative development of another: their number is too small for this mechanism to operate reliably.

2.2.2 Ultimate-loss reserving or short-term reserving?

In real life, a case involving severe bodily injury normally begins with the injured person being treated by a physician. Often operations or other medical procedures are necessary and, depending on the severity of the injuries, the injured party will spend a number of weeks or months in hospital, and his initial expenses will already be billed to him while he is there. Later there will be therapy, perhaps alterations to his home or residence, modifications to his automobile and any other changes necessary to adapt the injured person's living arrangements to his needs. As a result, the injured or the liable party will be confronted with a constant stream of bills.

An insurer cannot base his assessment of a specific injury on bills arriving sporadically over a period of time. Instead, he must estimate the total amount as soon as possible and set aside a reserve to cover this *ultimate loss*. Incoming bills will be paid from this amount. The ultimate loss thus remains constant; only its breakdown into "payments made" and "payments outstanding" will change over the course of the claims-handling process.

Making constant adjustments to the predicted ultimate loss value on the basis of incoming invoices or other claims—the so-called short-term approach to reserves—is not advisable. In such an approach the insurer sets an initial reserve which is simply a rough guess not geared in any technically correct manner to the predicted ultimate loss. The insurer increases the predicted amount periodically: in extreme cases, after every invoice received during the course of the claims-handling process. In doing this, the insurer risks distorting his annual accounts, as the reserves they show will not correspond to actual obligations. The short-term reserving approach is also problematical because both the primary insurer and reinsurer rate their premiums on the basis of previous claims experience. As mentioned above, under-assessment of the ultimate loss will result in future premiums being rated too low.

At this point, we should mention an exception that often occurs in connection with annuity cases, where the insurer recalculates and adjusts his reserve annually. Although the calculated amount does not reflect the ultimate loss as such, this is not the same as short-term reserving. These reserves are present-value amounts actuarially calculated to cover future annuity payments: such assets can be discounted because they have been segregated, with the interest earned flowing back into the reserve, and not into the company's annual result. Here, the discount rate used must reflect the effective interest return. The annual change to the technical reserve for individual claims results from the annual recalculation of the capital needed to cover the annuity for that claim.

$$P = (A \times p_{n-1}) - A$$

where:

- P is the new present capital value of the annuity;
- A is the annuity amount (The second A represents the current year's annuity payment.);
- p_{n-1} is the present value factor for an annuity term of $n-1$ payment periods (n is the remaining annuity term in the *previous year*);

Finally, it should be noted that, stated simply, the premium income in any given underwriting year should be adequate to cover claims arising from that period. This is why, as stated above, the ultimate loss amount should be assessed as accurately as possible in the actual year of occurrence, and an adequate reserve set aside. Where this is not done, the insurer ends up in a vicious circle. If, for example, unforeseen changes in the third year following the accident force the insurer to raise his assessment of the ultimate loss (and consequently the reserve), then the adjustment will have to be paid from the premiums received in this third year. That, however, would cut into the premium volume available for paying new claims reported during that year. This approach can continue only so long as the insurer's annual premium income keeps on increasing. If premiums were to drop, there would be insufficient funds to cover all losses. Since it is thinly capitalised insurers who are more likely to resort to the short-term reserving method, it is all the more important to point out the dangers involved.

2.3 Reserving methods

In practice, three basic approaches to reserving have emerged, each with its own methodology. These are: the individual, the statistical and the actuarial methods. Regardless of the method selected, the goal is the same: arriving at the most accurate calculation of the ultimate loss, for the purpose of setting aside reserves.

2.3.1 Individual reserving method

The *individual reserving method* assesses the ultimate loss separately for each individual claim in a portfolio. Specific individual circumstances are thereby factored in for each claim. The portfolio's total reserve requirement is equal to the sum of these ultimate losses.

The individual method generally brings more reliable results than the statistical method in the following cases:

- Non-homogeneous portfolios, where the individual claims differ considerably both in a qualitative sense (as to the nature of the loss, and thus as to the legal stipulations governing its assessment and settlement) and a quantitative sense (the cash value of the loss);
- Small portfolios, where the limited number of losses do not allow the law of large numbers to apply, making it impossible to use statistical methods to calculate the ultimate loss;
- Large losses, which make individual assessment of the ultimate loss indispensable in setting aside an adequate reserve (at least for severe bodily injury claims).

Logically, then, individual assessment is the method of choice for non-homogeneous and small portfolios. For large, homogeneous portfolios and claims that can be settled fairly quickly, though, individual assessment may in fact be no more reliable than statistical loss experience, and the effort involved is many times greater. In such cases, it would seem advisable to at least investigate the feasibility of switching to statistical methods. In both large or small portfolios, however, the individual reserving method is virtually the only viable option for assessing large claims.

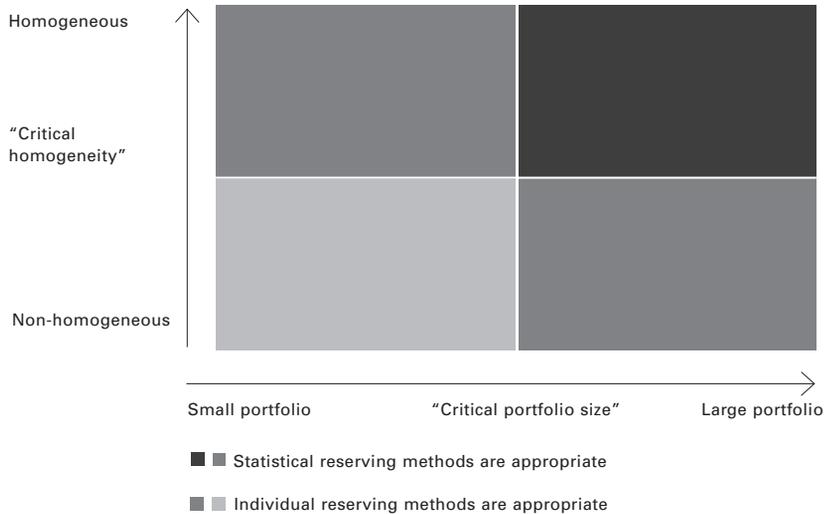
2.3.2 Statistical reserving method

The statistical approach uses actuarial and statistical analysis to predict an averaged ultimate loss figure for an entire portfolio of claims. This method makes sense where the individual method is too arduous, especially for large, homogeneous portfolios.

In making global assessments, a large portfolio's past loss experience is used as a basis for making deductions about the future. In the area of high-frequency claims, the law of large numbers comes into play, and statistical instruments are largely valid. Caution is advisable, however, when calculating the ultimate loss of a claims portfolio including segments that are exposed to substantial loss-relevant change. Such cases may be handled through the use of correction factors.

2.3.3 Individual and statistical methods: areas of application

The following schematic diagram shows the areas in which each method is employed. The boundaries defining “critical homogeneity” and “critical portfolio size” will shift depending on the composition of the portfolio.



In practice, primary insurers often use the statistical method in setting reserves for small third-party liability losses. As these are high-frequency claims, the varying amounts tend to balance out within the portfolio and there is no reason not to use a statistical or actuarial approach. On the other hand, the majority of large third-party liability losses are individually reserved for, as their small number—in relation to the entire portfolio—makes statistical treatment impossible. Thus both methods can be applied side by side in practice, and in many cases the structure of a portfolio will make this the logical choice.

2.3.4 Actuarial reserving method

In setting reserves for *reported* claims, insurers use the individual or statistical approach as described above. Under these methods, however, a claim that is not reported is not assessed. If it is not assessed, no reserve is made; and where there is no reserve, there are no funds available when time comes to pay the claim. Thus, neither of these methods is suitable for dealing with late claims: claims that may be reported years after the actual loss event.

Insurers realise that they will be faced with late claims. They realise as well that currently unknown, unforeseeable losses can materialise at a later date, and impact the entire portfolio. As they must report adequate reserves in the annual accounts on one hand, and the annual premiums must be sufficient to cover any losses incurred in this time period on the other, insurers have no choice but to set aside an actuarial reserve for all losses that may have occurred, but that have not been reported by the end of the year. *IBNR reserves* (incurred but not reported) has become the standard term for this.

Insurers may also find there is a need to subsequently reinforce the reserves for reported claims, even when the claims have been assessed individually. This is particularly true of reinsurers, who are further from the sources of loss information than the direct insurer. Thus, they use actuarial methods to strengthen reserves to allow for this eventuality: the accepted term is *IBNER reserves* (incurred but not enough reserved).

2.4 Adjustments to the ultimate loss (or reserve)

In theory, subsequent adjustment to the reserve should not be necessary if the initial ultimate loss assessment was correct. Where a reserve does prove to be too low or too high, however, it should be adjusted as quickly as possible. For that reason, reserves must be examined regularly for their “adequacy”. Many primary insurers review their predicted ultimate loss values (reserve values) annually, usually as part of drawing up the annual accounts. Project management and scheduling software can be very helpful in spreading the work load over the time available.

A claim’s estimated ultimate loss may fluctuate, either up or down, throughout the settlement phase, which may last many years. Where the insurer receives new information relevant to the ultimate loss which he could not have predicted despite all due diligence, the miscalculation is understandable and certainly unavoidable. Less easy to understand, however, are cases where a development should have been foreseen by a claims expert, or where certain heads of damage were simply not taken into account in assessing ultimate loss.

Another factor, the *risk of change*, also affects the ultimate loss. This is the increase or decrease—as a result of technical, social, economic, legal or political change—in the actual claims burden as opposed to its (statistically) anticipated development. This risk should be considered in assessing the ultimate loss; IBNR reserving methods are frequently used for this.

Despite every precaution in assessing the ultimate loss, claims sometimes develop differently than predicted. However, most can be recognised and eliminated early, in the scope of periodic loss reviews; thus—using a prudent, realistic approach to assessment—uncertainty can be limited to the area of unforeseeable developments. However, as soon as an expected development becomes apparent, the value for the ultimate loss (and thus for the reserve) should be adjusted immediately.

2.5 Particular issues for insurance practice

2.5.1 Reduced life expectancy

It is controversial whether an insurer, in assessing severe bodily injury claims, should consider reduced life expectancy after an accident as a factor in calculating the ultimate loss. While it may be generally acceptable for an insurer to predict the development of an injured party’s health, it is a particularly sensitive matter to estimate present value based on the probability of his early death. Those in favour believe that it is only realistic to take an accident victim’s statistically shortened life expectancy into account, and that this increases the accuracy of loss assessments. Opponents maintain that such

suppositions are unethical because the insurer, by invoking the most serious of the injured party's injuries, is aiming to reserve—and ultimately to pay out—as little capital as possible. The issue is usually decided by legislation or legal practice in the respective country, and specific questions would have to be answered differently according to the locality. In any event, it seems reasonable to limit any assumption of increased mortality to cases where either convincing statistical studies or a clear-cut medical opinion *in writing* is available.

Data on increased mortality must be applied cautiously in assessing the ultimate loss. Reliable, up-to-date statistics are scarce: this is due in part to medical progress, but also to the long time frame required for research on the life expectancy of seriously injured patients. Moreover, as the statistics themselves are not drawn from high-frequency losses, the law of large numbers does not work to average out results.

Empirical studies are available as an aid in assessing mortality for the most seriously injured individuals. One well-known medical study from the United States (“Long-term survival and causes of death”, Michael J. DeVivo, Samuel L. Stover) shows that most victims of spinal cord injuries have lower than average life expectancies—as much as 42% lower in the worst cases (complete quadriplegia); but still more than 20% lower for complete paraplegia. This study is used in the US as an aid in negotiations with attorneys for injured parties, or when deliberating a possible settlement.

A 1998 medical study from Australia (“Mortality following spinal cord injury”, John D. Yeo, John Walsh, Sue Rutkowski, Ros Soden, Mary Craven, James Middleton) also established that spinal cord injuries may reduce life expectancy: as much as 30% for complete quadriplegia, up to 16% for complete paraplegia and up to 8% for partial paraplegia.

As a Swiss Re survey of European insurers shows, only few cases are known in which the life span of an injured party deviated from the statistical average; and it was only in a few of these cases that a physician had actually given a prognosis of shortened life expectancy. The overwhelming majority of injured parties with shortened life expectancies had very serious brain injuries; a smaller percentage were paraplegics or quadriplegics. One possible indicator for a shortened life span is the inability of a seriously injured individual to breathe without artificial respiration.

The younger a person whose life expectancy is being assessed, the more difficult it is to make a reliable statement. One reason for this is that the probable date of death still lies in the distant future, even though the predicted reduction in life expectancy may be ten years or more. Thus for young people, such forecasts must span a considerable period of time. Another reason is the progress of medicine. One may find that an injured party whose present condition would seem to indicate a shortened life span will indeed be able to attain normal life expectancy, given future improvements in medical technique.

2.5.2 Children

When children suffer severe bodily injury, insurance companies face particular difficulties in assessing future income or loss of income. For children, as opposed to adults, assumptions must be made as to the type of training (apprenticeship or studies) they would have availed themselves of, the specific career choices they would have made, and the income they would later have had. Such assumptions are always highly speculative. When a judge draws on a different prognosis than the insurer in setting the amount of damages, this can mean—in hindsight—that the insurer’s assessment of the ultimate loss was “incorrect”.

2.5.3 Secondary psychological manifestations

In the case of psychological disturbances, it is particularly difficult to assess the injured party’s future degree of disability or employability. Post-accident complaints, for example by victims of shoulder/neck (whiplash) injuries and minor skull injuries without permanent organic damage, may include this type of psychological symptom. The injured parties frequently complain of neck pain, headache, nausea, dizziness and depression. It is extremely difficult to forecast the course healing will take, or the injured party’s future ability to work. It is similarly difficult to assess the ultimate loss and set an appropriate reserve. Where there is a concrete reason—for example a medical opinion—to believe a psychic complication is present, the prudent, realistic approach would be to include the entire loss of income in the ultimate loss.

2.5.4 Uncertain liability situation

When reserving for claims in which liability is disputed or unclear, an insurer should assume a percentage reduction in his share of the liability only if he can base his assumption on solid, factual information. Otherwise he should assess the ultimate loss based on the prospects for an out-of-court settlement or a court decision. Where a favourable result appears dubious, it is best to set reserves at 100%.

2.5.5 Loss of income, loss of pension

In order to determine the lost income to be indemnified (both past and, especially, future), the insurer must set a hypothetical amount for the injured party’s future salary. Career prospects and income growth, however, are exceptionally complex topics, and this can prove difficult. Wage trends, both individual and general, are important factors: age and career prospects determine the individual component, while the economic environment is a factor in assessing general income trends. Inflation must also be taken into account, as stipulated by the legal system. The assessment of this head of damage, and of the requisite reserve, will be higher or lower depending on how the insurer weights these income factors.

There is also the question as to whether the insurer should base his calculations on the injured party's gross or net salary; another issue is whether it will be necessary to compensate the injured party for the smaller pension he will now receive due to his no longer working. The answers to these questions depend in large part on the legal system and precedents that apply. Only when all these questions are answered can an adequate amount for loss of income be included in the ultimate loss.

2.5.6 Vocational retraining

In some countries it has become the practice in recent years to retrain accident victims who are no longer able to exercise their previous profession, in order that they may find at least some degree of employment. Retraining costs are compensated in most legal systems, and must be factored into the ultimate loss.

As a result of these recent developments, some insurers, especially in Germany, are considering ways of employing disabled individuals in the company itself, retraining them if need be. A German law on the integration of the most seriously handicapped people into working life (*schwerstbehindertengesetz*) also aims in this direction, obliging private and public employers to hire severely handicapped individuals.

2.5.7 The probability of disability and unemployment

We usually think of 65 as the normal retirement age. However, many employed persons do not work to that age due to unemployment, early retirement or disability. In countries where loss-of-income indemnities are determined with the help of present value tables or on the basis of empirical statistics, this probability of disability and unemployment is already included in the present value factors. For other countries, it should be noted that as age rises, the probability also rises that a person will no longer be employed for various reasons: thus the statistical probability of the injured party's receiving government benefits or unemployment compensation should be included in the calculation. In countries with high jobless rates, similar considerations could be applied to the high probability of unemployment. Where no correction is factored in, compensation for an injury could represent a material economic improvement for the injured party.

2.5.8 Pain and suffering

Compensation for pain and suffering is an important head of damage as it can comprise a large part of the settlement: up to 50% in some circumstances. In most countries, the size of such awards is largely influenced by legal precedent. Where legal practice is not fairly consistent, it can be difficult for the insurer to assess (and reserve with any accuracy) the amount needed to cover this head of damage. Where damages for pain and suffering are concerned, an insurer should never assess the ultimate loss and set aside a reserve on the basis of an optimistic assumption.

2.5.9 Interest

Pecuniary loss does not necessarily coincide with the time of the accident. For most heads of damage, the loss arises only later, in many small “packets”. This is the case with loss of income, for example, where the injured party will normally experience no loss at all until his monthly salary stops. From that time, however, a “new” loss will occur regularly, each month.

It usually takes many years to settle a claim for severe bodily injury, but in principle the responsible party is liable for a loss from the point in time at which it occurs. To compensate the injured person for the time elapsed between the loss and the receipt of indemnification, pre-settlement interest is paid.

The dates of all expenditures and losses relating to the accident are important data in calculating the interest, and this information must be determined for each head of damage separately.

While loss of income, as mentioned above, is a head of damage that increases every month by the amount of the injured person’s salary, most legal systems have labour legislation covering accident-related employee absences, and these oblige the employer to continue salary payments for a certain time. Thus, the pre-settlement interest should be calculated to reflect the actual loss, which starts only on the date of the first missing paycheque.

Throughout the period of treatment and care, the injured person will receive regular invoices for medical and nursing charges. If such payments are not paid by the insurer prior to settlement, interest will accrue from the date the invoices fall due, according to normal business practice. Where the liable party or his insurer does not pay these invoices directly, or immediately reimburse the injured party, the ultimate loss and the related reserves must be calculated to include the interest up to the time of the prospective settlement date.

Compensation for pain and suffering is a special head of damage as it is not intended to indemnify a financial loss, but a non-financial one. Thus, compensation is owed from the day of the impairment, and interest is also calculated from that date. This, too, must be included in assessing the ultimate loss.

Assuming a ten-year settlement period for a severe bodily injury claim, interest can become a very significant, or even the largest, head of damage. Leaving it out of the ultimate loss assessment can lead to significant under-reserving: at the time of the settlement, the funds available will be massively inadequate.

In practice, this problem is handled by making partial payments on account, towards the settlement of a loss that is owed but not (yet) exactly quantifiable.

2.6 Particular value drivers

When we consider the long-term trends in bodily injury claims, it soon becomes clear that it is always the same factors that drive up costs. In assessing claims, particular attention should be paid to these “value drivers”: nursing costs, increased life expectancy, developments in legal practice, lower (mandated) discount rates, changes in social awareness, and new claims patterns.

2.6.1 Explosive growth in medical and nursing costs

In Germany and Switzerland in recent years, insurance companies have been confronted with hospital bills exceeding CHF 1500 per day. In some injury cases, this has led to claims for unheard-of amounts. Compounding the soaring cost of medical and nursing care, the increased life expectancy as a result of state-of-the-art medical treatment is also causing settlement values to rise.

In numerous cases, nursing care is undertaken by members of the injured person’s family. This circumstance is to be factored in when assessing nursing costs, as family members always claim lower amounts than professional care providers. But experience shows that family members are only able to take on these responsibilities for a limited time. Even where they intend from the beginning to provide care for a longer period, they often give up sooner or later for physical, psychological or economic reasons. Thus third-party nursing care must be assumed as a rule, and appropriate reserves made. The degree of the injury and the age of the family members attending the injured person often provide key points of departure for estimating the future nursing situation realistically.

2.6.2 Changes in legal practice

In 1986 the Italian constitutional court recognised a new head of damage: *danno biologico*, the non-financial consequences of an impaired bodily integrity, either physical or psychological. Claims for disability have risen significantly in the following years.

In 1998 the UK’s highest court decided to lower the discount rate used in fixing lump-sum indemnity payments. This factor is now to be set in line with interest yields from risk-free, index-linked government bonds and not, as before, with equities. For the British insurance industry this could mean that long-term nursing claims will be up to 40% more expensive.

In 1994, Switzerland’s highest court also, deliberating on how much investment risk injured parties should be exposed to, questioned whether the 3.5% discount rate used to that time was appropriate, and raised prospects of a drop of one percent, to 2.5%. Such a change in the law—which is under consideration but not yet enacted—could substantially increase the costs of severe bodily injury claims and thus significantly impact the claims burden of motor vehicle liability insurers.

Such drastic and unpredictable changes are practically impossible to factor into normal ultimate loss assessments. Instead they should be cushioned by IBNR reserves.

2.6.3 Changes in social awareness and new claims patterns

In the mid-eighties, the most common kind of bodily injury in numerous countries including Switzerland, Germany, the Netherlands, Scandinavia and the US, was whiplash injury. Growing awareness of and attention given to this type of injury in these countries led to a marked increase in bodily injury claims, especially in the high-frequency loss area—though several whiplash claims in Switzerland and Germany have amounted to one to two million francs and more.

In certain countries, whiplash injuries have risen abruptly and now account for well above 50% of all reported traffic injuries. As a rule, this leads to a corresponding rise in the loss burden across the entire portfolio. In Eastern European countries as well, there are signs that claims consciousness in connection with this type of injury is on the increase. A rise in the area of high-frequency losses could be followed by an increase in severe bodily injuries. Such developments can practically be covered by IBNR reserves alone, as already noted in regard to the impact that court decisions can have on the loss burden.

2.6.4 Discount rate

The discount rate used in setting the present value of claims can be described as a value driver because its every change, however small, impacts the claims burden of an insurance company's entire portfolio and thus has a large influence on the course of its business.

To an injured party, on the other hand, it is vitally important whether the present value factor is set using a conservatively attainable rate of interest, or one which presupposes a less risk-averse investment strategy. Equally important is, furthermore, whether the prospective settlement is discounted on the basis of the real interest rate; ie whether inflation has been factored into the valuation.

The question of the level of investment risk acceptable to injured parties comes up repeatedly. What rate of interest can the injured party be expected to earn? As a rule, the recipients of lump-sum settlements are not specialists in financial matters, and more likely to invest conservatively, for example in government bonds, medium-term certificates of deposit, or savings accounts. But considerably greater yields can be obtained with equities, international money market investments or derivative instruments. The greater the gain, however, the greater the risk. Obviously, an injured party whose entire financial future may depend on the income derived from a lump-sum settlement is often not prepared to face such a risk, and would thus tend towards conservative investments. Such an individual, moreover, has few diversification possibilities—unlike an insurance company—and thus has fewer opportunities to hedge risks.

The amount of investment risk an injured party can be expected to carry was also the substance of the 1998 legal decision in the UK mentioned above. In accordance with this decision, the present-value factor for calculating settlements was to be based on the interest yield obtainable from no-risk, index-linked government bonds, and not equities as previously. A case pending before Switzerland's highest court at the time of this writing concerns the same issue.

For an injured party investing funds paid him as a settlement, it would seem fair to define "reasonable risk" on the basis of a portfolio composed predominantly of bonds with a small share of equities. Institutional investors and social security schemes, on the other hand, can accept greater investment risk—and expect a higher return—than the individual investor. While injured parties must worry about keeping their capital intact, the institutional investor has the advantage of greater diversification. These fundamentally differing risk/return profiles for individual and institutional investors should be reflected in different discount rates. It is doubtful whether dropping the discount rate across the board, as was decreed in England for injured parties, institutional investors and social security schemes alike, is justified.

For the insurance company, however, a drop in the discount rate means an increase in the present value of their ultimate losses, making claims more expensive. The insurance industry is paying close attention to this parameter because of the discount rate's particular impact on lump-sum settlements. Because of the judicial decision in the UK, the insurance industry in that country reckons on an increase in the claims burden of up to 40%. If the discount rate in Switzerland drops one percentage point to 2.5%, it would also mean a considerable increase in the overall claims burden.

3 Assessments for purposes of claim settlement

3.1 Function

An insurer views loss assessment differently according to whether it is geared towards setting a reserve or reaching a settlement. Both perspectives concern internal company processes. Assessment for the purpose of reserving is aimed at predicting an *ultimate loss value* so that a commensurate amount can be reserved. Assessments for settlement purposes are in-house preparations for negotiating with the injured party or his representative. As part of such preparations, working hypotheses or various options are worked out. Assessing a claim for settlement is also different due to the greater degree of certainty as to the injured party's state of health and lasting impairment. Indeed, such assessments should not be undertaken before the injured party's condition has stabilised to the point that a long-term prognosis can be made. If the insurance company was previously forced to make any forecasts as to the victim's future medical condition, these earlier suppositions will now be fine-tuned so that the claim can be settled on the basis of known amounts.

Reserving is performed first, and later forms the basis for the insurer's claim settlement. An assessment for reserving purposes should never be lower than one geared to settlement, as it should reflect the ultimate loss and not the settlement amount. Where the assessment of the ultimate loss was neither too optimistic nor too pessimistic, the resulting difference between the reserve and the settlement will not be very large. Consequently, the prudently realistic assessment approach recommended by Swiss Re will result in settlement amounts that correspond to the predicted ultimate loss established earlier.

In contrast to loss assessment for reserving purposes, which must comprise all heads of damage, settlements may only need to cover certain of these positions, as in the case of a partial settlement for medical costs. In principle, the ultimate loss, which is composed of both paid and outstanding portions of the claim, should remain unchanged.

If a partial settlement can be concluded at conditions that are more favourable to the insurer than were previously assumed, the ultimate loss—and thus the reserve—can be reduced by this difference.

However, if an overall settlement is reached, the total amount paid will correspond to the ultimate loss and the reserve can be set to zero. If any reserve funds remain after the settlement has been paid, they flow into the company's results for the year of the settlement.

The goal of an assessment made with a view to a settlement is to reach a fair arrangement in accordance with the legal principles of liability governing compensation at the time the payment is made. Within these ethically defined limits, it is legitimate for the insurer to work towards minimising his outlay.

In contrast, the objective of an assessment geared towards reserving is to enable the insurer to set aside appropriate funds. Both operational and regulatory considerations favour a cautious approach here. Excessive optimism, which leads to generally lower reserves, is not appropriate.

3.2 Forms of compensation

The question of whether compensation will take the form of an annuity or a lump-sum payment is an important consideration in all assessments, both reserving-orientated and settlement-orientated, and for the insurance company and the injured party alike.

In its form, an annuity is much closer than a lump-sum payment to the recurring losses it replaces (such as loss of a monthly income). The advantages from the injured party's point of view are that the insurance company bears the inflation and investment risk, and protects the injured party from misguided financial decisions. The injured party, however, faces the risk that the party obliged to pay compensation may become insolvent at some time during the term of the annuity.

Lump-sum payments have the advantage of settling a case definitively. On the one hand, this kind of payment avoids giving the injured party a periodical reminder of the accident; on the other, the insurance company can close the case, thereby putting an end to its administrative costs in the matter. Furthermore, a lump-sum payment may permit the injured party to restructure his life by becoming economically independent, taking a stake in a company or buying a home.

In most countries, compensation is awarded in the form of annuities, although a lump-sum payment is also admissible if there are important reasons. Where a country's laws allow the form of compensation to be chosen, one of the questions when the various interests are being weighed (in court, for example), should be whether the injured party is obliged to accept the form of compensation (annuity or lump sum) that is most favourable to the liable party. As a rule, where the law provides a choice, only the injured party can exercise it: the insurer cannot stipulate which form the payment must take.

3.3 Present value calculations

Determining the present value of a settlement during the settlement process is discussed above: what remains to be added here is that other parameters including the discount rate may also be subject to negotiation. Fixing the present value of a settlement can be a decisive part of the settlement process, particularly where the discount rate is not stipulated by law: ie where the parties are free to come to an agreement themselves, or where the matter is decided by the court.

3.4 New approaches to claims settlement

Many insurance companies find themselves burdened with long-term annuities. They examine such claims to see whether it would not be preferable for another company—a life insurance company, for example—to assume the annuity payments and administration. Such an arrangement permits the liability insurer to wind up the loss in the same way as with a lump-sum settlement, by paying out the entire reserve at once: not to the injured party, however, but to the life insurance company. The life insurance company will also take on the administrative side of the periodic annuity payments, as well as any risk associated with the difference—whether positive or negative—between the settlement and the reserve.

The liability insurer might find such a solution economically interesting. An open claim file on which monthly payments will have to be made for years ties up expensive personnel resources; and as long as the claim runs, the company will be under an annual obligation to re-examine the reserve, disburse payments and keep the books and accounts up to date.

Letting a life insurance company settle the claim can also impact the amount which the insurer can *discount* and the discount rate that he is permitted to apply. As explained above, an insurance company can normally discount only a part of its reserve: the amount it believes it will eventually pay to an injured party as a *lump-sum settlement*, on the grounds that this person will be able to put the capital to work earning interest; and though this amount can be discounted, the discount rate will only be the rate that the injured party can be expected to earn. Yet with an *annuity*, the reserve cannot be discounted at all. The interest it earns would flow into the business result and not into the reserve: if the insurer discounted the reserve here, it would be insufficient to indemnify the injured party.

However, in contrast to liability insurers, life insurance companies *are* permitted to discount their reserves. This is because a life insurance company establishes a security fund as an asset item, the so-called policy reserve, to cover future benefits to its policyholders. The interest earned by this security fund is not posted to investments, boosting the business result (as with the liability insurer) but is returned into the security fund. If a liability insurer transfers the funds necessary to indemnify an injured party to a life insurance company, it, too, can discount its reserve (the estimated ultimate loss) by the interest which the life insurer will be able to earn on this sum. Greater investment volume and greater diversification also mean that the life insurance company will (as an institutional investor) be able to invest more effectively than a single injured party.

Thus if the liability insurance company intends to handle the claim in this manner, it can apply a higher discount rate when establishing the reserve than if it assumes that payments must be made directly to the injured party. This way the company can reserve less capital initially, and pay out less at the time of the settlement.

Such new claim settlement techniques provide more than just administrative relief to an insurer: they have financial advantages as well. This approach to liability insurance, dubbed a “structured settlement” in England, could well be given greater attention in future.

3.5 Reservation clauses in settlements

Basically, claims that have been indemnified by a cash payment are considered closed. Any risk that the loss will develop more favourably than assumed at the time of the settlement (or less) is carried in equal measure by the injured party and the insurer. However, it is not uncommon, in settlement negotiations, for the parties to agree upon a reservation clause—or for a court to mandate one—which obliges the insurer to pay any difference should the loss deviate significantly from expectations. In some legal systems, this type of reservation—usually subject to a time limit—applies to both parties, so that a subsequent claim may be made by either party. This can result in the settlement being either raised or lowered.

The insurer should avoid such reservation clauses wherever possible, not least in the interest of obtaining a secure, predictable legal settlement. However, it should be noted that a reservation clause can be an important bargaining chip in negotiating a settlement involving a whole basket of measures.

If there is reason for either the insurer or the injured party to believe, before the settlement is agreed, that the loss may become greater in the future, this should be considered when determining or adjusting the reserve. Where a claim is unforeseeably affected by cost increases, despite there having been no forewarning in the settlement phase, the insurer should react by setting aside an IBNER reserve, either for a specific claim or, where necessary, a blanket IBNR reserve for the entire portfolio.

One way of avoiding the residual uncertainty connected with lump-sum settlements is to pay compensation in the form of an annuity. This not only avoids the reservation clause problem, but also any question as to the injured party’s reduced life expectancy.

3.6 Transaction period

This settlement phase may vary considerably. Where the insurer experiences no great difficulty in reaching agreement with the injured party directly, settlement can be reached quickly. If the complexity of the claim is such that the injured party engages legal counsel, the result can be a considerable delay, if only for the reason that the lawyer must acquaint himself with the facts of the case. If the parties file suit, this will occasion further delay. An out-of-court settlement—in most legal systems—may be concluded at any time, even if legal proceedings are pending. This may allow the settlement phase to be shortened.

4 National comparisons

4.1 “Abstract” assessment methods

Spain’s 1995 *Baremo law* essentially defines an “abstract” compensation system: that is, one which bases compensation on some standardised method. Here, the amount of compensation for bodily injury is calculated using a point system. The Baremo law includes a list of injuries with every injury allocated a range of points. In each individual case a physician has to calculate the total *number of points* (up to the legal maximum of 100) corresponding to the injuries suffered. The point score sets one of the parameters for the compensation table. The *age* of the injured person (the second parameter) is used to determine a *factor* that can be multiplied by the point score to arrive at a *basic compensation sum*. The injured person will be entitled to this flat amount in any event, regardless of income level or family situation.

The standard compensation sum can be adjusted to the injured person’s situation using *correction factors*. The Spanish Baremo system provides for the compensation amount to be increased if the injured party is above a certain *income level*, has suffered a particularly severe injury (above 75 points), or requires assistance with daily living. Since these increases in the amount of compensation are determined by the specific circumstances of the case, the correction factors introduce a “concrete” element into the standardised, abstract system.

The injured person also receives additional compensation for *temporary loss of income*. This is intended as indemnification for the time before his injuries have stabilised and can be assigned the correct number of points by a physician. Here, too, the Baremo law prescribes a standard *per diem* amount, although it makes a distinction as to whether the injured party is hospitalised or not.

4.2 “Concrete” assessment methods

The method generally used in Switzerland is to determine compensation and reserves on the basis of the financial damage expected, ie the actual or anticipated outlays or shortfalls. Particularly in the case of loss of income, a comparison is made between the situations before and after the injury: the difference is defined as the loss. For one-time compensation payments (or at least non-recurring payments), reserving is relatively straightforward. The future outlay on items such as medical costs, rehabilitation and retraining, modifying and re-equipping the home, are simply estimated. This can usually be done with the help of loss experience statistics or, in the case of compensation for pain and suffering, for example, by drawing on extensive legal precedents.

Regularly recurring payments, on the other hand, are projected for the foreseeable period of time they will continue using present value tables at a discount rate which now stands at 3.5%. This figure is intended to reflect both the real interest rate and a partial cost-of-living adjustment. To establish the present value factor, the tables are read for three case-specific parameters: the injured person’s gender, age, and the length of time for which compensation is to be paid. Once found, the present value factor is then multiplied by

the estimated annual payment (representing compensation for loss of income, nursing costs, increased needs and housekeeping services) to arrive at the present value. This amount will be reserved and paid out to the injured party as compensation when and if it is needed.

The present-value indemnification for an injured person's loss of income will usually be calculated up to his normal retirement age, unless the victim is self-employed and can credibly argue that he or she would have been able to continue working gainfully beyond that age. The costs for care, on the other hand, must be paid for the rest of the victim's life, so a higher multiplier has to be used. As a rule, however, the present value of periodic payments is not calculated from the date of the accident but only from the anticipated date of the settlement, to reflect the actual loss situation as concretely as possible. Until that point, the compensation amounts are simply added up.

4.3 "Hybrid" calculation method

French courts apply a hybrid approach that incorporates both concrete and abstract elements. Neither the French civil code nor liability laws such as the *loi Badinter* (liability law for traffic accidents) prescribe rules for calculating compensation. French civil law leaves it to the courts to quantify the loss and fix the indemnity.

For decades these calculations were done using a point system (*calcul au point*), except that costs already incurred up to the time of calculation would be taken at their actual values. The point system developed by judicial practice was based on the degree of disability.

In order to adapt the abstract, calculated result to the concrete situation, French court decisions increasingly favoured computing some of the compensation in terms of actual expected sums: eg future costs of care or permanent loss of income.

Today both methods are usually applied in combination. Bodily injury is measured using standard formulas (*abstract* method), with a physician determining the degree of disability in percentage points. The injured person receives a certain amount of compensation for each percentage point, the amount being determined by established judicial practice. Loss of income, however, and care costs are calculated for the actual case at hand (*concrete* method). Where severe disability is involved, this "hybrid" approach has led to significantly higher settlements.

Until the end of 1997 French law provided for a standard present value table for annuity calculations, with a discount rate of 4.75%. The new annuities article—A 331-10, in force since 1 January 1998—permits insurance companies to apply their own discount tables if these tables have been approved by an independent actuary.

4.4 Application of the different methods to a particular case

	Concrete calculation (Switzerland, Germany) Example: Switzerland	Hybrid calculation (France, Italy) Example: France	Abstract calculation (Spain) Example: Spain	
A 43-year-old bank employee at middle management level with an annual income of CHF 100,000 (or FRF 400,000) suffers severe skull and brain trauma in an automobile accident. The resulting incapacity to work is total and the victim requires 12 hours of assistance per day. He spends six months in hospital following the accident. Time of calculation: six months after the accident, upon release from hospital.	Lump-sum compensation for all heads of damage	100% I.P.P. (highest-compensation level) x 20,000 (per % point) = FRF 2,000,000	100 points (legal maximum due to complete disability) x 317,470 (factor) = ESP 31,747,000	
	Medical and nursing costs	Accrued medical and nursing costs: 250,00 (billed costs) Future medical costs CHF 6,000 p.a. x 19.78 (present value factor) = CHF 118,680 Future home care costs: CHF 100,000 p.a. x 19.78 (present value factor) = CHF 1,978,000	Accrued medical and nursing costs: FRF 700,000 (billed costs) Future medical costs (medication, therapy, daily living equipment) FRF 20,000 p.a. x 12.013 (present value factor) = FRF 240,260 Future home care costs: FRF 336,000 p.a. x 12.013 (present value factor) = FRF 4,036,368	Correction factor for nursing care (up to ESP 40 million on top of standard compensation)
	Loss of income	Past, accumulated: CHF 50,000 Future: CHF 100,000 p.a. x 14.28 (present value factor) = CHF 1,428,000	Past accumulated: FRF 200,000 Future: FRF 400,000 p.a. x 10.647 (present value factor) = FRF 4,258,000	Standard per diem for temporary loss of earnings (ESP 7,224 during hospitalisation, ESP 3,096 after release Correction factor from time condition stabilises, depending on income level (additional 10% to 75% of standard compensation)
	Pain and suffering	CHF 150,000 according to judicial practice	FRF 1,000,000 according to judicial practice (FRF 350,000 pain and suffering compensation for immediate family)	Correction factor for severe, permanent disabilities (ESP 10 to 20 million in addition to standard compensation Plus correction factor if score exceeds 75 points: up to ESP 10 million in addition to standard compensation)

Appendix I: Present value tables

Present value tables

The following tables are used as an aid in determining the present value of future, periodically recurring payments to injured parties. The examples (here, for life annuities) are taken from the tables currently in use in Switzerland, Italy, Germany and Spain.

Switzerland

Tafel 30

Mortalität; Zinsfuss 3,50%

Sofort beginnende, lebenslängliche Rente
(Schweiz)

Alter	Männer	Frauen	Alter	Männer	Frauen
0	26,60	27,23	50	17,58	19,90
1	26,58	27,23	51	17,23	19,61
2	26,49	27,17	52	16,88	19,32
3	26,41	27,10	53	16,53	19,02
4	26,32	27,04	54	16,17	18,71
5	26,22	26,97	55	15,81	18,39
6	26,13	26,90	56	15,45	18,06
7	26,03	26,82	57	15,08	17,72
8	25,92	26,74	58	14,71	17,38
9	25,81	26,66	59	14,33	17,02
10	25,70	26,58	60	13,94	16,66
11	25,59	26,49	61	13,56	16,29
12	25,47	26,40	62	13,17	15,91
13	25,34	26,31	63	12,78	15,52
14	25,21	26,22	64	12,39	15,12
15	25,08	26,12	65	12,00	14,71
16	24,95	26,02	66	11,62	14,29
17	24,82	25,92	67	11,23	13,86
18	24,68	25,82	68	10,84	13,42
19	24,55	25,71	69	10,44	12,97
20	24,43	25,60	70	10,05	12,51
21	24,31	25,49	71	9,66	2,05
22	24,19	25,38	72	9,27	11,58
23	24,06	25,26	73	8,89	11,12
24	23,92	25,13	74	8,50	10,65
25	23,78	25,00	75	8,12	10,18
26	23,62	24,87	76	7,74	9,70
27	23,46	24,73	77	7,37	9,23
28	23,29	24,58	78	7,01	8,77
29	23,11	24,43	79	6,67	8,31
30	22,93	24,28	80	6,34	7,86
31	22,73	24,11	81	6,02	7,42
32	22,53	23,95	82	5,71	7,00
33	22,32	23,77	83	5,42	6,58
34	22,10	23,59	84	5,13	6,18
35	21,87	23,41	85	4,85	5,79
36	21,63	23,22	86	4,58	5,41
37	21,39	23,02	87	4,31	5,05
38	21,14	22,82	88	4,04	4,70
39	20,88	22,61	89	3,79	4,36
40	20,62	22,40	90	3,55	4,04
41	20,34	22,18	91	3,32	3,73
42	20,06	21,95	92	3,10	3,44
43	19,78	21,72	93	2,90	3,17
44	19,48	21,48	94	2,70	2,91
45	19,18	21,23	95	2,51	2,67
46	18,88	20,98	96	2,34	2,44
47	18,57	20,72	97	2,17	2,23
48	18,24	20,45	98	2,02	2,04
49	17,91	20,18	99	1,88	1,86

Original table reprinted from: Barwerttafeln, Stauffer/Schätzle, vierte, vollständig neubearbeitete und erweiterte Auflage, 1989

Italy

Il danno biologico

Tavole di mortalità (Italia)

Calcolo rapido sulle lesioni permanenti alla persona

Tavole di mortalità – Aggiornamento ISTAT – Anno 1981

I valori indicati in tabella, previsti dal Rd 9 ottobre 1922 n. 1403, sono usati per la quantificazione dei danni permanenti alla persona, in particolare per calcolare la perdita di guadagno e, in mancanza di uno specifico riquadro normative, del danno alla salute. La tabella è nata sulla base delle rilevazioni statistiche di allora, ma rappresenta ancora un importante riferimento per l'operatore. Il criterio seguito per la quantificazione è questo: il ferito avrà una perdita in percentuale o totale di guadagno tanto minore quanto più è avanzato in età e, ovviamente, tanto più perderà quanto più guadagnava.

A ogni età il suo valore

Coefficiente di capitalizzazione $a(X + 1/2)$ di una rendita unitaria anticipata immediata intera (tavola di mortalità della popolazione italiana 1981 – ISTAT)

Femmine				Maschi							
Età	$a(X+1/2)$	Età	$a(X+1/2)$	Età	$a(X+1/2)$	Età	$a(X+1/2)$	Età	$a(X+1/2)$		
0	39,6079	35	29,2788	70	11,6704	0	37,9045	35	26,5030	70	9,4152
1	39,6333	36	28,8661	71	11,1343	1	37,8489	36	26,0463	71	8,9816
2	39,4295	37	28,4476	72	10,6081	2	37,7124	37	25,5836	72	8,5620
3	39,2140	38	28,0226	73	10,0931	3	37,4640	38	25,1154	73	8,1570
4	38,9895	39	27,5907	74	9,5900	4	37,2069	39	24,6417	74	7,7655
5	38,7588	40	27,1523	75	9,0997	5	36,9433	40	24,1624	75	7,3867
6	38,5225	41	26,7071	76	8,6245	6	36,6737	41	23,6776	76	7,0236
7	38,2813	42	26,2550	77	8,1666	7	36,3981	42	23,1870	77	6,6764
8	38,0351	43	25,7965	78	7,7259	8	36,1167	43	22,6911	78	6,3413
9	37,7829	44	25,3317	79	7,3018	9	35,8293	44	22,1912	79	6,0178
10	37,5250	45	24,8616	80	6,8937	10	35,5357	45	21,6883	80	5,7062
11	37,2621	46	24,3866	81	6,5013	11	35,2359	46	21,1348	81	5,4087
12	36,9941	47	23,9060	82	6,1250	12	34,9306	47	20,6797	82	5,1254
13	36,7215	48	23,4198	83	5,7650	13	34,6214	48	20,1732	83	4,8546
14	36,4446	49	22,9277	84	5,4214	14	34,3095	49	19,6644	84	4,5961
15	36,1628	50	22,4287	85	5,0941	15	33,9964	50	19,1541	85	4,3498
16	35,8759	51	21,9235	86	4,7830	16	33,6831	51	18,6442	86	4,1156
17	35,5839	52	21,4133	87	4,4879	17	33,3690	52	18,1357	87	3,8929
18	35,2869	53	20,8985	88	4,2085	18	33,0522	53	17,6290	88	3,6815
19	34,9849	54	20,3801	89	3,9446	19	32,7306	54	17,1243	89	3,4812
20	34,6777	55	19,8569	90	3,6957	20	32,4016	55	16,6218	90	3,2920
21	34,3645	56	19,3286	91	3,4617	21	32,0647	56	16,1223	91	3,1130
22	34,0443	57	18,7956	92	3,2418	22	31,7206	57	15,6254	92	2,9436
23	33,7169	58	18,2577	93	3,0357	23	31,3685	58	15,1292	93	2,7840
24	33,3828	59	17,7168	94	2,8427	24	31,0083	59	14,6369	94	2,6334
25	33,0426	60	17,1742	95	2,6623	25	30,6399	60	14,1486	95	2,4922
26	32,6966	61	16,6295	96	2,4939	26	30,2629	61	13,6615	96	2,3602
27	32,3440	62	16,0827	97	2,3358	27	29,8774	62	13,1752	97	2,2349
28	31,9846	63	15,5332	98	2,1869	28	29,4838	63	12,6884	98	2,1128
29	31,6184	64	14,9811	99	2,0445	29	29,0819	64	12,2026	99	1,9980
30	31,2454	65	14,4268	100	1,9026	30	28,6718	65	11,7226	100	1,8815
31	30,8659	66	13,8722	101	1,7477	31	28,2538	66	11,2493	101	1,7638
32	30,4794	67	13,3185	102	1,5490	32	27,8282	67	10,7813	102	1,5771
33	30,0856	68	12,7657	103	1,2168	33	27,3942	68	10,3186	103	1,2228
34	29,6853	69	12,2150	104	0,5000	34	26,9524	69	9,8617	104	0,5000

Nota: Incremento medio annuo della rendita vitalizia = 3%; attualizzazione al tasso legale del 5%; tasso tecnico di attualizzazione adottato = 2%

Fonte: Quaderno del Consiglio superiore della magistratura

Aggiornamento: 30 giugno 1996

Germany

Tabelle 221

Allgemeine Sterbetafel für die Bundesrepublik
Deutschland 1986/88 – Frauen
Zinsfuß 5,0%

Alter der Frau y	Lebenslängliche Zahlung		(12)äy
	(12)äy	Alter der Frau y	
0	19,804	50	15,303
1	19,910	51	15,087
2	19,891	52	14,864
3	19,867	53	14,633
4	19,839	54	14,395
5	19,809	55	14,150
6	19,776	56	13,897
7	19,742	57	13,636
8	19,705	58	13,367
9	19,667	59	13,091
10	19,627	60	12,806
11	19,584	61	12,514
12	19,540	62	12,214
13	19,493	63	11,907
14	19,444	64	11,592
15	19,393	65	11,269
16	19,341	66	10,939
17	19,286	67	10,602
18	19,230	68	10,258
19	19,172	69	9,907
20	19,111	70	9,551
21	19,048	71	9,190
22	18,981	72	8,826
23	18,910	73	8,460
24	18,836	74	8,094
25	18,759	75	7,728
26	18,677	76	7,366
27	18,592	77	7,008
28	18,503	78	6,656
29	18,410	79	6,312
30	18,313	80	5,976
31	18,212	81	5,651
32	18,106	82	5,337
33	17,996	83	5,035
34	17,881	84	4,745
35	17,761	85	4,468
36	17,636	86	4,205
37	17,507	87	3,955
38	17,372	88	3,719
39	17,232	89	3,496
40	17,087	90	3,287
41	16,936	91	3,090
42	16,780	92	2,906
43	16,618	93	2,735
44	16,449	94	2,575
45	16,275	95	2,426
46	16,094	96	2,288
47	15,907	97	2,160
48	15,712	98	2,042
49	15,511	99	1,933

Original table reprinted from: Kapitalisierungs- und Verrentungstabellen,
Schneider/Schlund/Haas, 2., neubearbeitete Auflage 1992

Tabelle 201

Allgemeine Sterbetafel für die Bundesrepublik
 Deutschland 1986/88 – Männer
 Zinsfuß 5,0%

Alter des Mannes x	Lebenslängliche Zahlung		(12)äx
	(12)äx	Alter des Mannes x	
0	19,519	50	13,771
1	19,654	51	13,517
2	19,624	52	13,257
3	19,589	53	12,993
4	19,548	54	12,724
5	19,505	55	12,451
6	19,460	56	12,173
7	19,412	57	11,892
8	19,361	58	11,606
9	19,307	59	11,316
10	19,249	60	11,022
11	19,189	61	10,724
12	19,126	62	10,422
13	19,060	63	10,116
14	18,625	64	9,806
15	18,919	65	9,493
16	18,846	66	9,177
17	18,772	67	8,858
18	18,699	68	8,537
19	18,625	69	8,216
20	18,550	70	7,895
21	18,472	71	7,575
22	18,389	72	7,258
23	18,302	73	6,944
24	18,210	74	6,636
25	18,113	75	6,334
26	18,010	76	6,039
27	17,902	77	5,753
28	17,789	78	5,475
29	17,671	79	5,206
30	17,547	80	4,946
31	17,418	81	4,697
32	17,283	82	4,457
33	17,142	83	4,228
34	16,995	84	4,009
35	16,842	85	3,800
36	16,683	86	3,601
37	16,517	87	3,412
38	16,345	88	3,233
39	16,166	89	3,063
40	15,980	90	2,902
41	15,788	91	2,751
42	15,590	92	2,608
43	15,384	93	2,474
44	15,173	94	2,347
45	14,955	95	2,229
46	14,730	96	2,118
47	14,500	97	2,014
48	14,263	98	1,916
49	14,020	99	1,826

Original table reprinted from: Kapitalisierungs- und Verrentungstabellen,
 Schneider/Schlund/Haas, 2., neubearbeitete Auflage 1992

Spain

Tabla III (España)

Indemnizaciones básicas por lesiones permanentes (incluidos daños morales)
Valores del punto (en pesetas)

Puntos	Edades				
	Menos de 20 años	De 21 a 40 años	De 41 a 55 años	De 56 a 65 años	Más de 65 años
1	88,918	82,320	75,720	69,707	62,391
2	91,663	84,671	77,679	71,636	63,379
3	94,125	86,775	79,421	73,359	64,379
4	96,309	88,628	80,944	74,873	64,919
5	98,211	90,232	82,249	76,182	65,471
6	99,835	91,586	83,335	77,280	65,879
7	101,981	93,428	84,873	78,793	66,666
8	103,914	95,083	86,247	80,150	67,344
9	105,640	96,550	87,458	81,350	67,912
10-14	107,156	97,830	88,506	82,396	68,373
15-19	125,937	115,273	104,606	97,012	76,299
20-24	143,186	131,293	119,399	110,438	83,539
25-29	160,401	147,268	134,137	123,830	90,933
30-34	176,516	162,227	147,939	136,369	97,832
35-39	191,560	176,192	160,825	148,076	104,251
40-44	205,561	189,192	172,823	158,971	110,202
45-49	218,544	201,248	183,952	169,075	115,695
50-54	230,540	212,389	194,237	178,412	120,743
55-59	246,501	227,178	207,855	190,815	127,916
60-64	262,148	241,678	221,209	202,974	134,948
65-69	277,490	255,893	234,298	214,897	141,844
70-74	292,530	269,831	247,133	226,583	148,603
75-79	307,274	283,494	259,716	238,042	155,230
80-84	321,731	296,890	272,051	249,277	161,727
85-89	335,902	310,024	284,145	260,290	168,098
90-99	349,798	322,900	296,001	271,089	174,343
100	363,420	335,522	307,626	281,674	180,465

Tabla IV (España)

Factores de corrección para las indemnizaciones básicas por lesiones permanentes

Descripción	Aumento (en porcentaje o en pesetas)	Porcentaje de reducción
Perjuicios económicos:		
Ingresos netos de la víctima por trabajo personal:		
Hasta 3.000.000 de pesetas ¹	Hasta el 10%	
De 3.000.001 hasta 6.000.000 de pesetas	Del 11 al 25%	
De 6.000.001 hasta 10.000.000 de pesetas	Del 26 al 50%	
Más de 10.000.000 de pesetas	Del 51 al 75%	
Daños morales complementarios:		
Se entenderán ocasionados cuando una sola secuela exceda de 75 puntos o las concurrentes superen los 90 puntos. Sólo en estos casos será aplicable	Hasta 10.000.000 ptas.	
Lesiones permanentes que constituyan una incapacidad por la ocupación o actividad habitual de la víctima:		
Permanente parcial:		
Con secuelas permanentes que limiten parcialmente la ocupación o actividad habitual, sin impedir la realización de las tareas fundamentales de la misma	Hasta 2.000.000 ptas.	
Permanente total:		
Con secuelas permanentes que impidan la realización de las tareas de la ocupación o actividad habitual del incapacitado	De 2.000.001 a 10.000.000 ptas.	
Permanente absoluta:		
Con secuelas que inhabiliten al incapacitado para la realización de cualquier ocupación o actividad	De 10.000.001 a 20.000.000 ptas.	
Grandes inválidos:		
Personas afectadas con secuelas permanentes que requieren la ayuda de otras personas para realizar las actividades más esenciales de la vida diaria como vestirse, desplazarse, comer o análogas (tetraplejias, paraplejias, estados de coma vigil o vegetativos crónicos, importantes secuelas neurológicas o neuropsiquiátricas con graves alteraciones mentales o psíquicas, ceguera completa, etc.)		

Descripción	Aumento (en porcentaje o en pesetas)	Porcentaje de reducción
Necesidad de ayuda de otra persona:		
Ponderando la edad de la víctima y grado de incapacidad para realizar las actividades más esenciales de la vida. Se asimilan a esta prestación el coste de la asistencia en los casos de estados de coma vigil o vegetativos crónicos	Hasta 40.000.000 ptas.	
Adecuación de la vivienda:		
Según características de la vivienda y circunstancias del incapacitado, en función de sus necesidades	Hasta 10.000.000 ptas.	–
Perjuicios morales de familiares:		
Destinados a familiares próximos al incapacitado en atención a la sustancial alteración de la vida y convivencia derivada de los cuidados y atención continuada, según circunstancias	Hasta 15.000.000 ptas.	–
Embarazada con pérdida de feto a consecuencia del accidente²:		
Si el concebido fuera el primer hijo:		
Hasta el tercer mes de embarazo	1.500.000 ptas.	–
A partir del tercer mes	4.000.000 ptas.	
Si el concebido fuera el segundo hijo o posteriores:		
Hasta el tercer mes de embarazo	1.000.000 ptas.	
A partir del tercer mes	2.000.000 ptas.	
Elementos correctores del apartado primero.7 de este anexo		
Adecuación del vehículo propio:		
Según características del vehículo y circunstancias del incapacitado permanente, en función de sus necesidades	Hasta 3.000.000 ptas.	Segun circuns- tancias

¹ Se incluirá en este apartado cualquier víctima en edad laboral, aunque no se justifiquen ingresos.

² Habrá lugar a la percepción de esta indemnización aunque la embarazada no haya sufrido lesiones.

Appendix II: Worksheet "Reserve assessment: bodily injury"

Reserving forms, IT-supported reserving

Reserving forms are also used by insurance companies as an aid in estimating the ultimate loss value. These forms include all significant heads of damage. A sample form is printed below.

Some insurance companies also use specially developed loss assessment software. Claims service staff are guided through the program, which contains all the necessary information for each head of damage ready to hand, such as per diem rates for inpatient hospital care, pain and suffering compensation tables and present value tables.

Claim no.:	Date of loss:
Name of injured party:	Occupation (incl. any second jobs):
Date of birth:	Injury:
Income:	Date of settlement:
Medical costs:	EUR
Care costs	
To date of settlement:	EUR
After date of settlement:	EUR
Dynamic:	EUR
Loss of income	
To date of settlement:	EUR
After date of settlement × present value factor:	EUR
Dynamic:	EUR
Loss of pension:	EUR
Retraining:	EUR
Modifications to dwelling:	EUR
Increased needs:	EUR
Other heads of damage:	EUR
Total:	EUR
Share of liability: ____ %	EUR
Compensation for pain and suffering (incl pension):	EUR
Costs/interest:	EUR
Payments to date:	EUR
Total reserve:	EUR
Remarks:	

Appendix III: Brief glossary of reserving terms

Adjustment frequency	Reserves should be reviewed often, preferably each time new information is received, and adjusted where necessary. It is very important that supervisors carry out the reviews.
Administrative costs	Administrative costs are a head of “damage” that can become surprisingly large. Here, a realistic estimate based on solid information is called for. This item should not be used only to “round out” estimates!
Careful!	Particular care should be taken where claims involve the following: <ul style="list-style-type: none">– catastrophes: pressure from public opinion!– victims’ organisations, particularly when media campaigns are involved;– class actions, particularly in the event of test cases brought by a legal aid organisation;– nursing care provided by specific third parties, particularly home care provided by relatives, as these persons may be forced to stop providing care at any time.
Closing the file on a claim	To avoid the necessity of reopening a claim, the file should only be closed when no further claims for compensation can be expected at all, either from a factual or a legal standpoint. This includes subrogation! Only then should the reserve be dissolved.
Cover	<p>In cases where cover is disputed, the following procedure may be tried: For cases that will come to trial, full reserves are established (ie in the amount of the estimated and calculated ultimate loss). For non-procedural cases, an out-of-court settlement will be attempted. In determining the prospects for a settlement, the negotiation climate between the insurer and the policyholder in the specific case is vitally important. Consideration must also be given to the current state of negotiations. Beyond this, one may proceed as follows:</p> <ul style="list-style-type: none">• Favourable outcome virtually certain:<ul style="list-style-type: none">– the reserve should be reduced by the amount of the heads of damage in which cover is being challenged, and should be no more than the sum insured (unless there is a possibility that it will be exceeded, as for example in pension cases in Germany);• Favourable outcome probable:<ul style="list-style-type: none">– reserve the probable settlement amount plus 10% to 20%, but no more than the sum insured;• Favourable outcome doubtful:<ul style="list-style-type: none">– 100% (full reserve).
Discounting	Annuities and other recurring compensation payments should only be discounted from the date a settlement may realistically be expected. In cases of severe bodily injury, discounting should start no earlier than five years, for example, after the date of the accident. In case of doubt, the lower discount rate should be used. The intention here is to reflect the principle of caution mandated in EU guidelines for the protection of the policyholders.

Extended events with large-loss potential

Where one event results in a large number of bodily injuries, the reserve should be assessed—in addition to the other general principles discussed here—taking the following points into consideration:

- the insurers involved in the claim, and their respective market share;
- the legitimacy of the claims and the number of claimants to be expected;
- publicity and (in the US) possible class actions;
- the probability (and amount) of a global settlement. If the chances for such a settlement are good, a basic scenario and cost model should be made with the allocation of payments among the policyholders, insurer and reinsurer;
- period of cover and any holes in cover;
- any changes of insurer;
- the definition of an insured event and the allocation in time;
- limits per event, year or cover period;
- serial or aggregate claims;
- exclusions;
- infringement of the duty to notify; and the
- settlement strategy (risk of disputed liability and/or suits to determine liability).

Heads of damage

All heads of damage must be considered from the beginning, even where claims under that head have not yet been made. With bodily injuries, heads of damage include:

- medical costs: the use of an average, experience-derived *per diem* value has proved effective in estimating hospitalisation costs and in-hospital treatment. Inflation must be taken into account!
- care costs (temporary or permanent; equipment must also be included);
- loss of income (temporary or permanent; future);
- subrogation on the part of a social insurance organisation;
- increased needs (eg the costs of remodelling the dwelling of the injured party);
- occupational retraining costs;
- compensation for pain and suffering.

It is important to carefully assess the degree of invalidity and the amount of lost income, taking hypothetical wage increases into consideration.

IBNR reserve

The following factors are of particular importance when deciding on the establishment or strengthening of a non-actuarial IBNR reserve:

- new legislation or changes to legislation in force;
- shifts in legal practice with respect to the types of damage that are compensated, damage awards, cover;
- changes in claim-handling practice;
- technological, economic or social developments;
- statistical loss experience data from the market;
- new types of damage;
- portfolio structures (eg portfolios with large share of private liability, professional liability and/or business or product liability insurance).

Information	Reserving should normally be based on all available information as well as general past experience, and should take all foreseeable trends and developments into account (eg the prospects of a rapid settlement). Where information is missing or incomplete, efforts made to acquire it often prove rewarding. Should this not be successful, reserving should be pessimistic, on the basis of the information available.
Interest	This is a head of damage that can become surprisingly large, particularly in cases where liability is disputed and it is not possible to make payments on account. This item should not be used only to “round out” estimates!
Legal and claims-handling practice	Special features particular to applicable legal and claims-handling practice must be taken into account. This includes specifically the practice of the courts, the customary amounts and modes of compensation, as well as generally accepted principles as they apply to discounting, interest, costs, and reserving regulations.
Liability	<p>In cases where liability is disputed or unclear (eg contributory negligence), any percentage reduction of the liability share should be reflected in the reserves, but only if the expected reduction is solidly substantiated by the facts of the case. Otherwise, reserving should be based on the expected settlement or trial outcome, as follows:</p> <ul style="list-style-type: none"> • Favourable outcome virtually certain: <ul style="list-style-type: none"> – the expected share of liability can be taken as a given; • Favourable outcome probable: <ul style="list-style-type: none"> – increase the expected share of liability by 20%; • Favourable outcome doubtful: <ul style="list-style-type: none"> – 100% (full reserve).
Long claims-handling phase	For claims with a long claims-handling phase, all the individual factors that work to make different heads of damage more expensive must be considered: inflation, wage trends, health cost trends, pension dynamics.
Present value calculations	Calculations of present value are for the most part based on tables (often called “mortality tables”) giving the statistical probability of death for a defined group of the population. In some countries, including Switzerland, there are also occupational activity tables, which provide statistical data on periods of employment as well.
Reduced life expectancy	Care should be exercised in assuming reduced life expectancy. Such an assumption may be plausible when a doctor has confirmed in writing the diagnosis of a “persistent vegetative state”, for example in connection with a severely injured patient dependent on a mechanical respirator; or when indicated by reliable statistical studies.

Reservation clauses

Where an amicable settlement includes a reservation clause (particularly with regard to a worsening of the injured party's state of health), but no demands for payment on this basis are received, the reserve increase calculated due to this clause should be phased out (over a period of, say, ten years).

Reserving aids

The use of reserving aids is absolutely vital to ensure consistent assessments. Such aids include claim scheduling systems, reserving programs, reserving forms, and checklists with rules of thumb and (periodically updated) experience values on individual heads of damage or types of injury. (Such lists, which should be used periodically, can be particularly useful in cases where claims information is incomplete.)

Reserving methods

Bodily injury claims should generally be assessed as early as possible, particularly if they are severe or if the portfolio is small. In large portfolios, however, setting a reserve rapidly using experience-based averages can be just as reliable, and does not require as much information. With this type of procedure, classifying the claims according to severity may prove useful. However, the use of average values for a preliminary assessment should be limited to the first six months (one year maximum) after the accident. This method is also particularly suitable for small property losses where there is a lack of information.

Reserving policy (philosophy)

Reserving for claims is closely connected to settling them, and must be done with as much care. Recommended is a prudently realistic reserving policy orientated not towards short-term need, but towards the predicted, expected ultimate loss. Improbable worst-case scenarios should not be considered. Reserves are established on the basis of available information, which means that serious efforts must be made to acquire any missing or incomplete information. Where these are unsuccessful, pessimistic reserving is advisable.

Short-term reserving

Increasing a reserve step-by-step as new information comes in is only admissible in exceptional cases, and then only when unexpected developments or other unusual circumstances make this necessary. One example is when the insurer has no concrete information as to his possible liability with regard to a particular problem area or type of loss, but only the vague suspicion that the insurance industry may become liable at some later date. In such cases, any attempts at estimating the ultimate loss would be meaningless. However, as a precautionary measure, and after considering all the facts, a reserve may be established up to but not exceeding the amount of the company's exposure over a period to be defined for the individual case.

Subrogation proceeds

Subrogation proceeds should only be considered to the extent that they are realisable—both legally and factually.

Uncertain medical development

Where the development of the injured party's medical condition is uncertain (particularly when the uncertainty is reflected by the expert diagnosis), reserving should be pessimistic. Such cases include:

- brain damage, especially in children and when the injured party is in a coma for an extended period (more than a very few days!);
- psychological manifestations and injuries often accompanied by psychological manifestations, such as whiplash, amputations, burns, disfigurement;
- serious back or nerve injuries.

US personal injury

These mainly include product export claims and claims deriving from the US operations of companies insured in Europe. The assessment can vary greatly depending on the jurisdiction. The basics of determining the reserve are:

- The attorney's report, which absolutely must cover the following areas:
 - status of the discovery proceedings;
 - an exact portrayal of the facts of the case;
 - an analysis of the liability exposure;
 - a quantitative evaluation giving the verdict exposure and settlement exposure, and including information on costs and interest charges.
- The loss adjuster's report, which absolutely must contain statements on the following points:
 - amount of the loss;
 - cause of the loss;
 - possibility of subrogation.
- Of great importance are also:
 - the specific state and county affected;
 - experience with the court of jurisdiction;
 - the legal adversary's attitude (aggressive, or amenable to making a settlement);
 - the "jury climate" (conservative/progressive, victim-friendly, deep-pocket minded);
 - the severity of the case where injury and death are involved (circumstances, degree of injury, conditions of death);
 - the question of whether the insured's behaviour is excusable (punitive damage exposure);
 - the question of whether class action suits are likely or already under way.

Valuation maxims

Reserving should be done on the basis of a prudently realistic estimate. Basically, a greater degree of certainty as to the facts of the case will allow a commensurate reduction in the required "caution factor". In concrete terms, this means that if a loss-reducing circumstance will occur with a probability of less than 50%, a full (100%) reserve should be established for that head of damage.

Dr. Sylva Fisnar
Swiss Re

Sylva Fisnar is a legal claims consultant in Swiss Re's Legal & Claims Services in Zurich. In this position, she has gathered broad international experience with the legal aspects of claims handling. Her main area of responsibility is large reinsurance losses. In addition, she carries out legal analyses, offers underwriting support to various Swiss Re departments and arranges seminars on specific insurance topics for Swiss Re's international clientele. Sylva Fisnar has a doctorate in law from the University of Zurich, where she specialised in the law of criminal procedure.



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