

## **CALCULATING THE PRESENT VALUE (OR LUMP SUM) OF A FUTURE LOSS**

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1. Our plan is to provide you with a basic introduction to the calculation of future loss claims. This will involve a discussion of actuarial as well as legal issues. The principle thrust of our presentation is to suggest the following:
  - a. the basic calculation can be performed by any one of you with a financial calculator, or with any one of a number of current word processing or spreadsheet programmes;
  - b. the present value (or lump sum) of a future loss depends almost entirely upon the elements or "drivers" which are fed into the actuarial analysis;
  - c. most "fights" ought to be over these drivers rather than the actuaries; indeed, ideally, only one actuary ought to be retained, and that only after the trial judge has determined the drivers (or after counsel have agreed as to what those drivers are).

### **PART I: CLAIMS FOR THE LOSS OF FUTURE INCOME**

2. The expectancy of a future income loss ranges over a spectrum of certainty.

3. At one end are the probable losses of indeterminate quantum. For example, one may be able to say that a plaintiff will have to have an operation some time in the future, and will lose income as a result. But one cannot say when that operation will take place, or how long the period of convalescence (and wage loss) will be. Losses of this character are generally assessed as either a factor to be taken into account in assessing the general damages, or are assessed as a separate, but "general", loss. In the case of future income losses which are probable but unquantifiable the courts will usually award something under the term "impairment of earning's capacity."<sup>1</sup>
4. At the other end of the spectrum are those losses which can be calculated with somewhat more precision. For example, in the case of a person who had an established earning's history before becoming a quadriplegic, one *can* say that he or she will lose \$x for y years. It would, however, be wrong to simply multiply the annual loss by the number of years, since to do so would ignore the role of interest. The proper approach is to calculate what is termed the "present value" (or "PV") of that loss. In essence, this calculation produces a lump sum which (the theory goes), invested now, will generate \$x for y years, and end with a zero balance.<sup>2</sup>

#### THE MECHANICS OF THE PV (OR LUMP SUM) CALCULATION

5. The calculation of the present value of the lump sum necessary to generate an income stream of \$x for y years is easy to perform.

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<sup>1</sup> A recent example may be found in *LeBlanc v. Marson Canada Inc* (1995) 146 NSR (2d) 392 (CA), where the Court of Appeal upheld an award of \$40,000 for "reduced employability" stemming from an injury that was not disabling but which could affect the plaintiff's employment in the future.

<sup>2</sup> As noted in *Dillon v. Kelly* (1996) 150 NSR (2d) 102 (CA) at p.123.

Financial calculators can do it. Most current spreadsheet and word processing programmes will also do it. For example, all versions of WordPerfect higher than 5.1+, or the spreadsheet programmes Quattro-Pro or Excel,<sup>3</sup> provide a way to calculate PV. All one needs to do is plug in the following figures:

- a. the interest rate;
- b. the annual payment;
- c. the number of years of the payment;
- d. the ending balance (which in our case must be zero); and, usually as an option,
- e. whether the annual payment occurs at the beginning or the end of the year.

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<sup>3</sup> I name these programmes only because I used them. I expect MS Word for Windows (etc.) provides the same functionality.

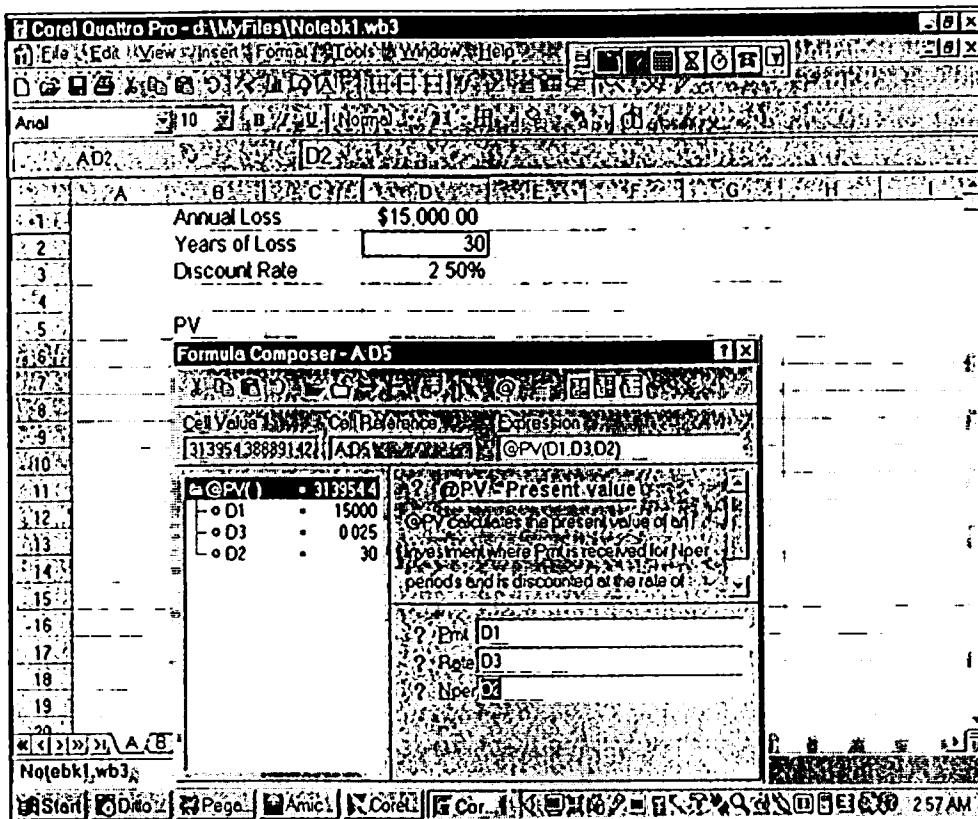


Figure 1: Quattro Pro PV calculation.

- Once those figures are set the programme will produce the "lump sum" necessary to generate that future income stream over that period of time.<sup>4</sup> By way of example, Figure 1 demonstrates how it can work for you with Quattro Pro. Figure 2 demonstrates the result.

<sup>4</sup> For some reason which escapes me the lump sum is expressed as a negative figure, but that need not concern us here.

7. Of course, if this was all that were necessary there would be no need to retain actuaries.<sup>5</sup> But it is not. The PV formula does not take into account mortality, the risk that the plaintiff would not in ordinary course have survived for  $y$  years. Nor does it take into account morbidity, the risk that the plaintiff would have been disabled in normal course.

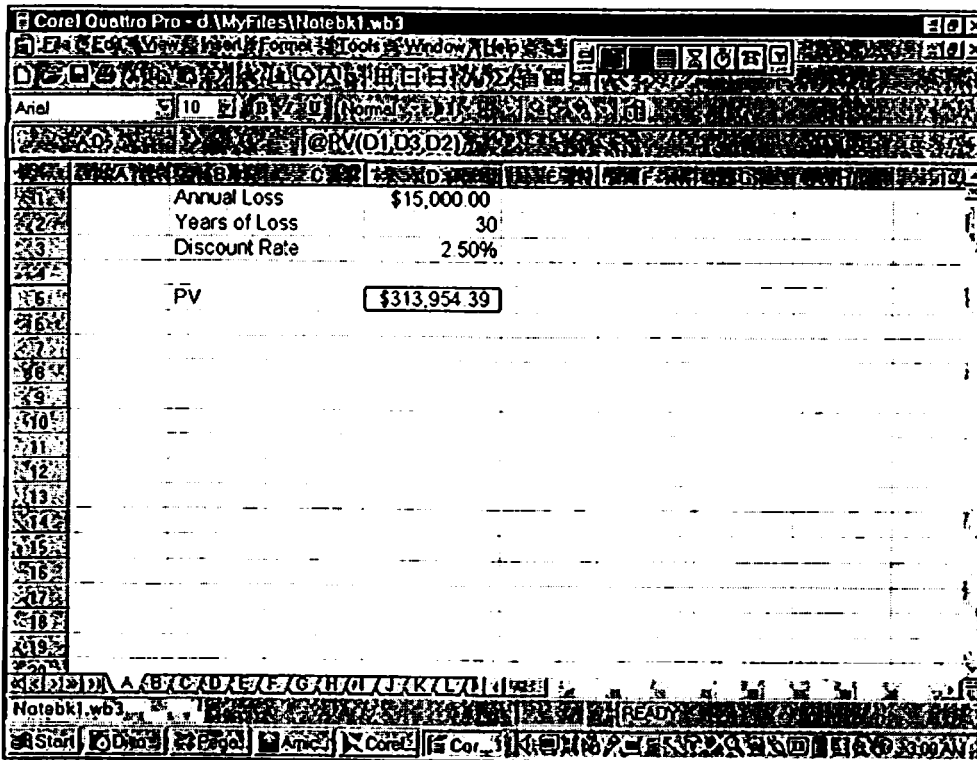


Figure 2: The result of the PV calculation.

8. Actuaries can perform an important role in determining the effect of those and other statistical risks on the PV calculation. Actuaries are able to fine tune the PV calculation, by incorporating the risk of mortality (for example) into the PV calculation. When these risks are

<sup>5</sup> Remember that much of the law respecting these kinds of losses and their calculation developed before the revolution in computers and software made these kinds of calculations possible for lay persons.

incorporated the PV is reduced to reflect the statistical risk of early death.

9. However, while the inclusion of mortality (or morbidity) does reduce the lump sum (or PV), the magnitude of that reduction depends to some degree on the nature of the future loss. For example, in the case of future income loss, the reduction is in ordinary course relatively small. We all risk death, but the vast majority of us will survive until at least the normal retirement age of 60 or 65. What this means is that most of us can arrive at an *approximate* assessment of a future income loss claim without retaining an actuary. (I say approximate because one must take into consideration the fact that the PV calculation in this case will be too high, and so must be discounted by a small percentage.)
10. On the other hand, in the case of a claim for the cost of future care, where the injury has had a substantial impact on the plaintiff's life expectancy, the impact of mortality will have a much greater impact, especially where its effect is to reduce mortality to something less than the normal retirement age. In such a case an actuary will be very useful in providing the appropriate mortality table and the resulting calculations.
11. Nevertheless, it is important to remember that most actuaries will use the same mortality tables, and employ them in the same way. That being the case there would appear to be little need to employ two (one for each party) to calculate the effect of mortality on the PV once the other figures have been decided upon.

## **PART I: FUTURE INCOME LOSS: THE DRIVERS**

12. The calculation of the lump sum (or present value) of a future loss of income is relatively easy, because the "drivers" are either fixed or readily ascertainable. They are as follows:
  - a. the interest rate;
  - b. the amount of the annual loss;
  - c. the duration of the loss; and
  - d. mortality (and perhaps morbidity).
  
13. Little need be said here about the annual loss or its duration. Those figures depend on the facts of each case. Evidence ought to exist as to the plaintiff's annual income and the likelihood of its having continued had the accident not occurred. Nor can much be said here about mortality. It has a downward impact on the PV, but not usually a major one. It is a calculation that can be done by any actuary (and hence does not require two) on the standard mortality table, which, in ordinary course, ought to be the same for most plaintiffs.
  
14. The interest rate does require some discussion, however, both because of its impact on the final lump sum; and because of the tempting potential for fights about its rate.

### **THE INTEREST (OR "DISCOUNT") RATE**

15. What is the interest rate to be used in the PV calculation? It is the "discount rate," which is the difference between the future projected interest rate (reflected in the rates provided by secure, conservative investment vehicles such as government bonds) and the rate of

inflation (reflected in price inflation rates). It is the "real" or net interest rate, once the effects of inflation have been netted out.

16. A discount rate or net rate is used to avoid the enrichment of the plaintiff at the expense of the defendant that would take place if the effects of inflation were not taken into account.<sup>6</sup>
17. The discount rate can have a significant impact on the PV or lump sum. For example, using WordPerfect Suite 7 or 8 I can produce the following table of lump sums for a person who is projected to experience a loss of \$15,000 a year for 30 years based on a variety of discount rates:

Annual Income	Years of Future Loss	Discount Rate	Present Value
15,000	30	0%	\$450,000
		1%	\$390,987
		2%	\$342,666
		2.5%	\$321,803
		3%	\$302,827
		4%	\$269,756
		5%	\$242,116

18. It is quite apparent from the above that even a small departure from the prescribed rate can have a significant impact on the final PV figure. The significance of that impact may tempt counsel to look for and introduce evidence designed to foster an argument that in their case the prescribed rate ought not to be applied.

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<sup>6</sup> See the explanation given by Hallett, J as he then was in *Comeau v. Marsman* (1981) 47 NSR (2d) 550 (TD) at p.559.

19. However, for reasons discussed below most jurisdictions have seriously limited the parties' ability to argue over what the interest (or discount) rate should be. In many jurisdictions the difference has been set at 2.5%.<sup>7</sup> For example, our CPR 31.10(2) provides as follows:

"The rate of interest [*i.e.*, the discount rate] to be used in determining the capitalized value of an award in respect of future pecuniary damages, to the extent that it reflects the difference between estimated investment and price inflation rates, is two and one-half per cent (2 1/2%) per annum."

20. In ordinary course the Court will expect you (or your expert) to use a discount rate of 2.5% when calculating the lump sum or PV of those "future pecuniary damages."
21. It will be recalled, however, that CPR 31.10(2) provides for the use of 2.5% "to the extent that it reflects the difference between estimated investment and price inflation rates." It will also be recalled (as demonstrated above) that the discount rate can have a significant effect on the lump sum figure. Rates higher than 2.5% drive the figure down; rates that are lower drive it up. The question then becomes whether the courts are prepared to depart from the prescribed figure of 2.5%; and, if so, under what circumstances.
22. It seems clear that in Nova Scotia the courts have the power to depart from the 2.5 per cent figure prescribed by CPR 31.10(2), but only where there is clear evidence that the plaintiff's "pattern of future

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<sup>7</sup> For example, Ontario uses 2.5% under its Rule 53.09(1), the wording of which is virtually identical to our own CPR 31.10(2).

earnings would depart materially in either direction from the rate of inflation."<sup>8</sup>

23. For example, the basic assumption underlying CPR 31.10(2) is that the plaintiff's income would have moved "in lock step with inflation,"<sup>9</sup> an assumption which justifies the use of a fixed figure like 2.5 per cent. However, if the evidence was clear that the plaintiff's income would have increased substantially faster and higher over time than the rate of inflation, then a smaller discount rate could be used.<sup>10</sup>
24. It is submitted, however, that the courts are (and ought to be) reluctant to depart from the prescribed rate, especially in cases of

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<sup>8</sup> *Corkum v. Sawatsky* (1993) 126 NSR (2d) 317 (CA), per Chipman, JA at p.330, explaining the discussion in *Armstrong v. Baker* (1992) 111 NSR (2d) 239 (TD), and the cases discussed therein, at pp.250-52. That same limited power has been recognized in Ontario: see *Dziver v. Smith* (1983) 146 DLR (3d) 314 (Ont CA) at pp.317-18; *Ligate v. Abick* (1996) 134 DLR (4th) 538 (Ont CA) at pp.545-47.

<sup>9</sup> *Comeau v. Marsman* (1981) 47 NSR (2d) 550 (TD), per Hallett, J at p.561.

<sup>10</sup> *Ibid.*; see also the discussion in Finlay, "Productivity and the Discount Rate Since Ontario Rule 53.09," (1989) 10 *Advocates' Quarterly* 326-43. An example of such a plaintiff would be a young professional, whose income in his or her later years can often be expected to be significantly and materially higher than in their early years. In such a case one cannot reasonably assume that their income would have moved "in lock step" with inflation, and a lower (or perhaps a variable) discount rate ought to be used. A recent example may be found in *Ligate v. Abick, supra.*, where the trial judge, based on evidence that inflation rates based on labour productivity were increasing much faster than inflation rates based on price indexes, chose a discount figure of .5%. The Ontario Court of Appeal upheld the trial judge's decision, given the evidence, but appears to have been unhappy with this departure from the prescribed rate of 2.5% for the reasons set out above.

long-term losses of salaried workers (where any prediction of future interest and inflation rates become increasingly exercises in "crystal-balling").<sup>11</sup>

25. As noted in *Giannone v. Weinberg*,<sup>12</sup> rules such as CPR 31.10(2) have two purposes:

"One of them is to avoid the expense incurred by parties in calling economic and actuarial evidence relating to future investment and price inflation rates in every case where future pecuniary damages are in question in order to establish the discount rate to be used. The other purpose is to avoid the general injustice of similar cases decided at the same time having different results because of the use of different discount rates in the calculation of the award."<sup>13</sup>

26. Both purposes (and particularly the second) are frustrated if parties call such evidence in an attempt to avoid the prescribed rate.<sup>14</sup> It is submitted that the frustration of the social policy underlying the

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<sup>11</sup> See, for example, the comments of Saunders, J in *Armstrong v. Baker, supra*, at pp.251-52.

<sup>12</sup> (1989) 68 OR (2d) 767 at pp.777-78.

<sup>13</sup> The observation of Chipman, JA in *Corkum v. Sawatsky, supra* at p.330, that the prescribed rate was passed "with the intention that it would avoid the expense and uncertainty involved in evidence being brought forth in every case on that point" is to the same effect.

<sup>14</sup> The concern that these purposes was being circumvented by parties calling such evidence in an attempt to avoid the prescribed rate was repeated by the Ontario Court of Appeal in *Ligate v. Abick, supra*. at pp.547-49.

prescribed rate cannot be justified, at least in cases of long-term losses, precisely because of the fundamental indeterminacy of the process. While we purport to calculate a loss covering twenty or thirty or forty years, we cannot in all honesty say that we are doing anything other than "crystal-balling" the future. Such a process is bound to be arbitrary. And because it *is* arbitrary, justice ought to require that all plaintiffs (and all defendants) be subject to the same prescribed rate, given the important consequences that any departure from the rate has on the PV calculation.

27. It is also possible to address any perceived need to take differences in earning's potential or productivity into account without tinkering with the discount rate. For example, as suggested by Hallett, J (as he then was) in *Comeau v. Marsman*, an alternative to adjusting the discount rate "would be to make an upward adjustment of the award to reflect such a contingency."<sup>15</sup>
28. It is accordingly submitted that in ordinary course, especially when dealing with long-term losses of salaried employees, that the prescribed rate of 2.5 per cent per annum be used in calculating the lump sum value of a future income loss.

## PART II: CLAIMS FOR FUTURE EXPENSES

29. Plaintiffs who are severely injured frequently have claims for the cost of future expenses stemming from their injuries (for example, the cost of future care). The basic approach towards calculating such a claim remains the same as with claims for the loss of future income. However, the calculation is complicated by a number of differences inherent in the differences between a claim for loss of future income and one for a future expenses.

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<sup>15</sup> *Comeau v. Marsman*, *supra*, at p.561.

30. First, claims for future loss expenses are generally for the actual (or at least projected) *post-accident* life expectancy of the plaintiff. This is to be contrasted with a claim for loss of future income, which is based on the *pre-accident* life expectancy (up to a relatively fixed retirement date). Hence the plaintiff's claim for future expenses can be calculated for a much longer period than that for lost income; but it can also be calculated for a much shorter period, especially where the injury materially shortens the life expectancy of the plaintiff, creating what is sometimes called "the lost years."<sup>16</sup>
31. Second, in cases of severely disabled plaintiffs who have a claim for both lost future income and personal care expenses, "[i]t is established that a deduction for personal living expenses must be made from the award for lost earning capacity for the years she will actually live. This is necessary to avoid duplication with the award for cost of future care."<sup>17</sup>
32. In other words, once there is an award for personal care and expenses which covers expenses that would in normal course have been paid out of earnings, there must be a deduction to avoid overcompensating the plaintiff. The deduction is also applicable to the "lost years."<sup>18</sup>

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<sup>16</sup> The "lost years" are in essence those years between the year in which the plaintiff could have been expected to die had the injuries not been sustained, and the new probable date of death as a result of those injuries.

<sup>17</sup> *Toneguzzo-Norvell v. Burnaby Hospital* (1994) 110 DLR (4th) 289 (SCC), per McLachlin, J at p.296; see also *Watkins v Olafson* (1989) 61 DLR (4th) 577 (SCC) at pp.592-93;

<sup>18</sup> *Ibid*, pp.296-97; see also *Semenoff v. Kokan* (1991) 84 DLR (4th) 76 (BCCA).

### Claims for the Cost of Future Housekeeping

33. It is respectfully submitted that as a general rule a claim for the cost of domestic services, at least in cases involving injured homemakers, has gained recent but growing acceptance in Canadian jurisdictions, including Nova Scotia.<sup>19</sup>
34. In general, following the decision of the English Court of Appeal in *Daley v. General Steam Navigation Co* [1980] 3 All ER 696, where that court recognized claims for both pre-trial domestic services (*provided* they were actually incurred) and future domestic services. The claim represents a judicial recognition of the value of the domestic services provided by a housewife to a family unit.<sup>20</sup>
35. Such claims could also be evaluated on a PV basis, but it is submitted that courts (particularly in Nova Scotia) will be reluctant to adopt a too-slavish adherence to the PV calculation in such cases. It is more likely that, overall, the awards will tend to be general rather than calculated amounts.
36. There are probably two basic reasons for this, one associated with contingencies; and one associated with overall policy concerns.
37. First, a claim for the cost of future domestic services cannot be considered in isolation from other aspects of the overall claim. The claim for the cost of future domestic care of a full-time homemaker

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<sup>19</sup> For example, in *Reid v. Googoo* (1993) 119 NSR (2d) 207 (TD) at 221, Kelly, J awarded \$23,500 for the cost of future domestic services that would be required by the injured plaintiff (a housewife).

<sup>20</sup> See, for example, the comments of Vancise, JA in *Fobel v. Dean* (1991) 83 DLR (4th) 385 (Sask CA) at pp.395-98.

must surely be different from someone who works full-time outside the home and also claims lost future income. Ordinarily, one would expect the latter to have incurred in any event the cost of domestic expenses, costs which the former would not.

38. Similarly, as people age they will in normal course require the assistance of others to perform some of their domestic work, particularly the heavier kind. As was observed by Murray, J in *Langshaw v. Hui*,<sup>21</sup> "[r]ealistically, people do not mow lawns and shovel snow to age 81.55. By that time in life the likelihood is that they would have been seeking assistance for some time."
39. Second, it is submitted that in most cases the evidence falls short of establishing a complete inability to perform all housework all the time. The question then becomes how the court quantifies the cost of such future services.<sup>22</sup>
40. These are the same difficulties encountered by the courts in dealing with claims for lost future income where there is a partial but not complete disability. As has been noted above, actuarial calculations

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<sup>21</sup> (1994) 159 AR 106 (QB) at p.118.

<sup>22</sup> A useful discussion on the problem of measurement can be found in Cara Brown, "Housekeeping claims: An Economist's View" (1997) 19 *Advocates' Quarterly* 83. She points out that while commercial rates are sometimes offered in calculations of such claims, most people use private arrangements where the rates are much less. She also notes that studies show that people almost always *overestimate* the amount of time they actually spend on housekeeping; and that professional housekeepers are usually more efficient and can get the work done almost 25% more quickly (which argues for a discount of any estimate of requirement replacement time by something in the range of 25%).

in such cases may be of some assistance, but they cannot be slavishly followed.

41. It is submitted that the courts have dealt with these concerns by accepting actuarial evidence as providing some assistance in setting an outside limit for the claim, but then discounting the actual award to allow for these contingencies. As was observed by Somers, J in *Vykysaly v. Jablowski*,<sup>23</sup> "[i]n calculating the damages the cost of replacement help is a major item for consideration *but is not the only factor* to be taken into account."
42. There is also appears to be some concern (particularly where the claim for housekeeping is expressed as a *quantum meruit* claim by an uninjured spouse) that some part of the services claimed fall within the purview of what the uninjured spouse ought to perform in any event.<sup>24</sup>
43. Third, there is as well a concern to insure that the global award is not inflated beyond reasonable bounds by the recognition of numerous separate heads of damage such as claims for domestic service. The most trenchant observations in this regard are to be found in *Krocker v. Jansen* (1995) 4 BCLR 178 (BCCA).
44. In that case the plaintiff, aged 35, was injured in a car accident. She later married. The trial judge found that her injuries limited her ability to do heavy housework, though she still did some. The judge held that the plaintiff would be permanently disabled from

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<sup>23</sup> (1992) 8 OR (3d) 181 (GD) at p.197.

<sup>24</sup> This is an inference based on the results of the decisions in *Matheson v. Bartlett* (1993) 121 NSR (2d) 373 (TD) and *Landry v. McCormick Estate* (1997) 158 NSR (2d) 97 (TD).

some of her housework, for 130 hours annually for three years post-trial and 72 hours per year thereafter. He assessed damages for loss of ability to perform household tasks at \$23,000, based in part on actuarial evidence. He also awarded general damages of \$50,000, past wage loss of \$18,500 and loss of future earning capacity of \$10,000.

45. On appeal the Court of Appeal accepted that such a claim was now recognized, but voiced strong concerns about the need to apply "the test of reasonableness" to such awards; and to keep in mind always the overall global award when reviewing the awards under separate heads of damage which make it up. Mr Justice Gibbs (speaking for three of the five-panel bench) stated at p.189 that

"There is much merit in the contention that the court ought to be cautious in approving what appears to be an addition to the heads of compensable injury lest it unleash a flood of excessive claims.... It will be the duty of trial judges and this Court to restrain awards for this type of claim to an amount of compensation commensurate with the loss. With respect to other heads of loss which are predicated upon the uncertain happening of future events measures have been devised to prevent the awards from being excessive. It would be reasonable to expect that a similar regime of reasonableness will develop in respect of the kind of claim at issue in this case.

"Applying the test of reasonableness here, and with respect to the trial judge, on the facts and particularly the limited extent of the physical impairment, the award of \$23,000 under a separate head takes it out of the reasonable and into the inordinately high category. Although precision is not possible, on balance, \$7,000 would be fair and adequate compensation in these circumstances, based upon the trial judge's estimate of \$10 per hour for 130 hours gradually decreasing over the years. By way of comparison the award in 1989 in *Hall v. Miller* (1989) 64 DLR (4th) 369 (BCCA) was \$11,000, and in 1990 in *McCallum v. Ritter* (1990) 72 DLR (4th) 49 (Sask CA) it was \$9,960. The physical limitations imposed upon the appellant in the case at bar appear to be somewhat less severe than in those two cases, although, of course, the nature of the injuries was different in each."

46. The first paragraph of the above passage was cited with approval by Chipman, JA in *Woods v. Hubley*,<sup>25</sup> where the trial judge's award of \$60,225 (including gross up) for the cost of future housekeeping was reduced to \$10,000. I would suggest that this conservative approach will in general course hold true for most claims in this area. For example, in *Dorie v. Williams*<sup>26</sup> the plaintiff,

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<sup>25</sup> *Woods v. Hubley* (1995) 146 NSR (2d) 97 (CA) at p.125.

<sup>26</sup> (1994) 127 NSR (2d) 29 (TD).

a 57-year old housewife, suffered from constant neck and shoulder pain, and was unable to carry on with her normal activities, such as baking, vacuuming, cleaning the house and gardening. Her claim for loss of housekeeping capacity was treated by the judge "as one element in the loss of amenities of life" for which general damages of \$23,000 were assessed.

47. In *Reid v. Googoo*<sup>27</sup> the plaintiff was found to be unable to perform most household chores. She was awarded \$23,500 for lost housekeeping capacity.

### PART III: CLAIMS FOR LOSS OF SUPPORT

48. A claim for the economic loss associated with the death of a spouse or parent is in principle no different than one for loss of income or the cost of future care; and its calculation is to be approached in the same way.<sup>28</sup>
49. However, the determination of the amount of support which has been lost is complicated somewhat by the fact that families may have one or two income earners; and may have children as well.
50. It would appear that in Nova Scotia, at least, the current state of the law with respect to two-income families where one of the income earners dies is the following:
- a. the pre-accident net income of the two income earners is added together;

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<sup>27</sup> (1993) 119 NSR (2d) 207 (TD).

<sup>28</sup> *Keizer v. Hanna and Buch* [1978] 2 SCR 342 (SCC) at p.351.

- b. 30% of that total net income is then deducted as having been personal use income consumed by the earner who is now deceased;
  - c. deduct the surviving spouse's net income from the remaining 70%; and
  - d. use the resulting figure as the *prima facie* loss for purposes of calculating the PV.<sup>29</sup>
51. I say *prima facie*, because the resulting figure is only a first approximation of the loss, and it must be assessed in light of the overall circumstances of the family unit. For example, as Hallett, JA noted in *MacNeil v. Gillis*, the loss of 30% of a family's joint net income is likely to be far greater with poor families than with rich families.<sup>30</sup> The degree of that relative impact may justify (as it appears to have done in *MacNeil*) the use of a larger or smaller figure than that produced by the "conventional" 30% deduction. As well, where there is clear evidence that the deceased departed from the "conventional" expenditure of 30% of net income on him- or herself, the Court might be prepared to use a different percentage reduction.
52. This takes us to the second driver, which is the "life expectancy" of the loss of support. With children, it appears that the claim for support can in ordinary course be taken as stopping when the child reaches age 18-22.<sup>31</sup> Hence PV calculations ought to stop at that point. With surviving spouses, the life expectancy is clearly longer.

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<sup>29</sup> This at least was the approach approved by Hallett, JA for the Court in *MacNeil v. Gillis* (1995) 138 NSR (2d) 1 (CA) at pp.42-43.

<sup>30</sup> *Ibid.*, at p.43.

<sup>31</sup> *MacNeil, supra*, p.37.

Barring divorce, one can expect the claim to last for the life expectancy of the surviving spouse, although the amount of that loss will change at the point the deceased spouse would have retired had he or she not died.

53. The contingencies of divorce (had the deceased not died) or of remarriage are difficult to deal with. There are statistics for both, and both can be used by an actuary in much the same way that mortality tables are used. And it is certainly clear that a claim for loss of support will be materially reduced if not extinguished altogether where the surviving spouse in fact remarries, and the new spouse (and step-parent if there are children) makes as much if not more than the deceased spouse.<sup>32</sup>
54. On the other hand, the Court of Appeal in *MacNeil* was clearly reluctant to make too much use of such statistics in the PV calculation. It preferred instead to apply a flat 20% reduction to the PV award once it had been calculated in order to deal with these contingencies.

#### **PART IV: THE "GROSS-UP" FOR INCOME TAX FOR CLAIMS FOR LOSS OF SUPPORT AND FOR THE COST OF FUTURE EXPENSES**

55. Claims by dependants for loss of support in fatal accident cases, and claims by plaintiffs for the cost of future ongoing expenses (such as the cost of future care) share one characteristic that is not shared by a claim for loss of future income: awards in respect of such claims must be "grossed up" to allow for the incidence of income tax.

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<sup>32</sup> See *Skelding v. Skelding* (1994) 118 DLR (4th) 537 (BCCA).

56. The gross up recognizes that in both types of claims the plaintiff's seek an amount that is *net* of tax.<sup>33</sup> However, any lump sum award which generates income to pay the future loss will attract tax, which will reduce the income otherwise available to meet that expense. If the award is not "grossed up" in an amount sufficient to neutralize the impact of taxation, the plaintiff will in fact receive less than what is necessary to compensate him or her for their loss. The calculation is complicated by the fact that any lump sum awarded to generate income to pay the income tax the future-loss award attracts will itself attract tax. In effect, the gross-up must itself be grossed-up to ensure that the plaintiff nets sufficient income to meet the future expenses for which the original award was made.

57. There are three principle issues arising out of the need to award a gross-up for income tax:

- a. what income tax credits or deductions would be available to the plaintiff to soften the blow of taxation?
- b. what is the marginal rate at which the plaintiff's income will be taxed and what is it based upon? and
- c. how do we deal with the fact that a plaintiff's tax liability is based on income from both lump sums to compensate for loss for income (for which no gross up is allowable) as well as to compensate for future expenses (for which a gross up is allowable)?

58. It is submitted that the proper approach in calculating gross-up is as follows:

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<sup>33</sup> As opposed to a claim for loss of income, which is a claim for a loss *before* tax.

- a. first, calculate the annual tax liability (figure "A") that will fall on the plaintiff as a result of the annual income flowing to him or her as a result of the award in respect of loss of future earnings;
  - b. second, calculate the annual tax liability (figure "B") that will fall on the plaintiff as a result of his total or her future annual income, comprised of the following:
    - i. the annual income in respect of lost future earnings;
    - ii. the annual income from all other sources of income; and
    - iii. the annual income in respect of the award for the cost of future care;
  - c. third, deduct figure "A" from figure "B" to arrive at the initial income tax liability for which a gross-up must be awarded, which in turn is used to generate the initial "present-valued" capital sum necessary to fund payments to meet that initial income tax liability; and
  - d. fourth, prepare the necessary additional calculations to take into account the fact that the payments generated to pay the income tax liability will themselves be subject to tax, to arrive at the final income tax liability for which a "present-valued" capital sum is determined.
59. This was the approach adopted by the BC Court of Appeal in *Cherry v. Borsman* (1992) 94 DLR (4<sup>th</sup>) 487.
60. It is to be noted that the income on which the tax liability is to be calculated includes annual income from "all other sources of

income." This raises the question of what "other income" ought to be included: all income from all sources (for example, the general damages award or an inheritance), or only that income generated by the lump sum award for future income loss and expenses?

61. In *Scarff v. Wilson* (1990) 66 DLR (4<sup>th</sup>) 52 (BCSC) Cumming, J answered the question, after a careful review of the jurisprudence, by concluding that the "other income" ought to include:
- a. the income in respect of lost future earnings;
  - b. the income arising from the award for general damages; and
  - c. any other income that the Plaintiff might reasonably be expected to "earn" in the future.
62. Mr Justice Cumming's approach was approved by the BC Court of Appeal in *Cherry*. As the Court of Appeal noted at pp.517-18:

"In our opinion, what is decisive on this issue is that to do other than 'stack' this income means one of two things, neither of which is acceptable in principle. The first is that it would mean the future care fund standing by itself would not survive the plaintiff's life expectancy. The second is that to do otherwise than 'stack' would mean calling upon the plaintiff to use her income from her loss of future earnings award and other income to maintain the integrity of the future care costs throughout her life expectancy. *In our opinion the obligation to maintain the*

*integrity of the future care award falls on the defendant, not the plaintiff.*"<sup>34</sup>

63. It is emphasized that this approach does not mean that the defendant must pay anything in respect of the taxes on such income. Rather, it means only that in determining the marginal rate at which the income for future care costs is to be taxed (and hence the gross-up necessary to offset such liability) the other income must be included in the base on which the future care cost income is stacked.
  
64. It should be noted that once the marginal rate is determined, proper allowance ought to be made for any income tax credits or deductions which might be available to the plaintiff. For example, a plaintiff who is severely disabled may have credits or deductions available to him or her (for example, in respect of the cost of a personal attendant) which would reduce the tax otherwise payable. Such credits or deductions must be taken into account in calculating the gross-up, and in this area an accountant or actuary may be better positioned than an actuary to provide evidence.

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<sup>34</sup> In the recent jury trial of *Piercey v. Lunenberg*, the Honourable Justice MacDonald followed this approach in stacking all income, from whatever source, for the purpose of determining the marginal rate at which the income for the cost of future care award would be taxed.

## PART V: CONTINGENCIES

65. I have dealt with this issue in another place, and will not deal with it extensively here.<sup>35</sup> It is a factor however that must be taken into account when quantifying a future loss claim.
66. Once the PV is calculated the court will turn to what is known as the question of contingencies: should the award be reduced (or increased) to take account of the fact that the vagaries of life and employment make unrealistic any firm assumptions about them, particularly when the claim extends for many years into the future.
67. Anyone reviewing the Supreme Court of Canada trilogy cases.<sup>36</sup> could be forgiven the conclusion that in ordinary course a contingency factor ought to be applied to a future loss claim. In the case of future income loss claims, the assumption appeared to be (at least as set out in the trilogy) that overall a wage earner would as a matter of course suffer rather more negative than positive contingencies; and that on balance a future loss claim ought to be reduced by something in the range of 10-20%. All three stressed the negative contingencies of employment. And in *Thornton* the Supreme Court expressly upheld the British Columbia Court of Appeal's imposition of a 10% contingency figure notwithstanding that the trial judge, who had considered the issue, had concluded that the positive and negative contingencies cancelled each other out. Given the Supreme Court's repeated assertions that appellate courts ought not

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<sup>35</sup> A more detailed presentation of this topic can be found in Richardson, "Wrestling with Negative and Positive Contingencies when Quantifying Future Loss," CBA Professional Development Conference, Halifax, April 1996.

<sup>36</sup> I of course refer here to *Andrews v. Grand & Toy Alberta Ltd* (1978) 83 DLR (3d) 452 (SCC); *Thornton v. School District No. 57 (Prince George)* (1978) 83 DLR (3d) 480 (SCC); and *Arno v. Teno* (1978) 83 DLR (3d) 609 (SCC).

to interfere with trial judges in the absence of errors of law, one could easily conclude that notwithstanding Dickson, J's reservations on the point, a contingency reduction ought normally to be applied; and that a reduction in the range of 10-20% would in many cases be an appropriate one.<sup>37</sup>

68. In the years following the trilogy many courts adopted a contingency reduction of between 10% and 20% (and even on occasion higher figures) when dealing with future loss claims.<sup>38</sup> A summary of what appears to be the general rule can be found in the comment of McLachlin, J (as she then was) in *Milina v. Bartsch*<sup>39</sup>

"In recognition of the fact that the future cannot be foretold, allowance must be made for the contingency that the assumptions on which the award for pecuniary loss is predicated may prove inadequate. *In most cases*, this will result in a deduction, since the earnings and cost of care figures are based on an uninterrupted stream that does not reflect contingencies such as loss of employment, early death, or the necessity of institutional care. *When no evidence is available, courts have made deductions for such matters in the range of 20 percent.* Where evidence is

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<sup>37</sup> See, for example, Dickson, J's observation in *Andrews v. Grand & Toy, supra*, at p.470: "The figure of 20% which was used in the lower courts (*and in many other cases*), although not entirely satisfactory, should, I think, be accepted" (emphasis added).

<sup>38</sup> See the comments and cases discussed in W.H.R. Charles, *The Supreme Court of Canada's Handbook on Assessment of Damages in Personal Injury Cases* (Toronto, 1982) at pp.20-21.

<sup>39</sup> (1985) 49 BCLR (2d) 33 (SC) at p.79.

available, the deduction for contingencies may be increased, decreased, or eliminated according to the proof presented. Evidence on contingencies is to be encouraged." (emphasis added)

69. In more recent years courts have shown an increasing reluctance to use the "normal" rate in assessing a contingency, at least without any evidence. In part this may have been the result of a recognition that not all contingencies are negative. Some are positive. Without any evidence as to the relative strength of either, courts may be becoming increasingly reluctant to assume that if a negative contingency was to be applied, it ought to be based on such a large figure. The courts have also begun to fine tune their analysis of the problem, and to consider the impact of both general contingencies (those affecting all people in the plaintiff's situation) and specific contingencies (those more or less unique to plaintiff).
70. It is submitted that one approach to the balancing of negative and positive contingencies is to adopt an analysis which breaks contingencies into categories, the nature of which will depend upon the nature of the claim and the contingency in issue. Indeed, the courts have sometimes noted that because different types of contingencies may apply to a claimant, or because the types may vary with the nature of the future claim, the contingencies should be discussed separately for each claim.<sup>40</sup>
71. General contingencies represent those kinds of contingencies (positive and negative) common to most people, and include such things as the risk of death, disability, accident, unemployment, promotion, technological change, career change and the like. Specific

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<sup>40</sup> See *Andrews v. Grand & Toy, supra*, where separate contingencies for future care and future income losses were discussed; and see *Wender v. Trikha* (1991) 8 CCLT (2d) 138 (Alta QB) at 120.

contingencies are contingencies peculiar to the particular plaintiff, such as a extremely marketable skill or a poor work record, or a personal record of severe depression.<sup>41</sup>

72. The nature of the contingency will also depend upon the particular kind of future loss claim being made. For example, in a claim for the cost of future care a court is required to take into account the contingency that a plaintiff will not be able to receive such care at home for the rest of his or her life; but that in all likelihood will at some time be forced to receive it in an institutionalized (and hence less expensive) setting.<sup>42</sup>
73. This fine-tuning of the analysis can be assisted by actuarial evidence, but of a kind usually more detailed than that found at trial.
74. In general, however, the kinds of contingencies which one most often sees in actuarial reports (for example, mortality rates) have a relatively small impact on the lump-sum outcome. This is because of the difference in the way that medical and actuarial scientists deal with statistical risk. By way of example, take a basic life table which table shows that in a group of 1,000 healthy men all aged 40, 28 of them will be dead in 10 years. Hence the number of deaths (28) represents average mortality for this group, and produces a survival rate of 97.2%.

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<sup>41</sup> *Graham v. Rourke* (1990) 74 DLR (4th) 1 (Ont CA) at 14; *Tonrud v. French (No. 2)* (1991) 84 DLR (4th) 275 (Man CA) at 287.

<sup>42</sup> See for example *Mortimer v. Cameron* (1994) 111 DLR (4th) 428 (Ont CA), where the future cost claim was reduced by 20% to allow for that contingency; see also *McErlean v. Sorel* (1987) 42 DLR (4th) 577 (Ont CA); *Malat (No. 2)* [1979] 4 WWR 673 at 684; *Andrews v. Grand & Toy, supra*, fn.1; and *Wenders* (1991) 8 CCLT (2d) 138, aff'd 14 CCLT (2d) 225 (Alta CA).

75. If this group is compared with a group of 1,000 men aged 40 who have a medical condition that resulted in 42 deaths over 10 years, there would appear to be a 50% increase in the number of deaths between this group and the "normal" group. However, if you compared the survival rate of this group (95.8%) with the survival rate of the normal group (97.2%) one is left with a mere 1.4% difference.
76. In other words, notwithstanding that a person in the impaired group has a 50% increased likelihood of dying (as opposed to a person in the normal group), the increased likelihood of any particular person in that group (*i.e.*, the Plaintiff) dying is only 1.4%. Thus while the difference in the survival rate would warrant a contingency, it would not warrant a reduction in the range of 50% -- or even in the range of 20%. In fact, the figure would be much smaller.
77. This analysis suggests that notwithstanding the "usual" contingency reduction, a more appropriate reduction for the risks of mortality and morbidity, *at least where supported by the evidence*, is in the range of 4-5%.
78. I pause here to note that the same result may obtain insofar as that other contingency of life is concerned, unemployment, albeit for different reasons. The courts have noted on a number of occasions that the sting of unemployment has been reduced if not eliminated in modern society by the social safety net (and in particular, unemployment insurance and workers' compensation).<sup>43</sup> The effect

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<sup>43</sup> See, for example, *Joubert v. Rosetown (Town)* (1987) 60 Sask CA 200 (CA) at 215; *Andrews v. Grand & Toy* (1978) 83 DLR (3d) 452 (SCC) at 470; *Hspahic v. Fernandez* (1987) 47 Man R 306 (CA) at 307-308, where the court noted that workers' compensation benefits would have offset unemployment caused by injuries; and *O'Hara v. Belanger* (1989) 98 AR 86 (QB) at 118.

of the social safety net is to reduce if not totally eliminate the effect of the contingency of unemployment (for whatever reason).

79. This conclusion is in accord with a number of recent appellate decisions to the effect that contingency reductions for *general* contingencies, when made, ought to be "modest,"<sup>44</sup> and in the range of 4%.<sup>45</sup>
80. A note of caution has to be sounded here.
81. The actuarial approach deals with statistical averages, and assumes that one cannot say for sure whether a particular plaintiff will fall within a risk or not. That is, the fact that in any given year 20 of a cohort of 1,000 will die of lung cancer will only justify a mortality rate up based on a 2% chance of death in any given year, because on the statistics alone one cannot say whether any particular person in that cohort will fall within the group of 20 who die.
82. In other words, and using the analysis developed in the courts, the actuarial approach is dealing with *general* contingencies.
83. However, if there is evidence which suggests that the plaintiff will probably fall within that group of 20 within the next year, or the next five years, one would surely be entitled to use a much higher contingency factor than that used by an actuary.
84. Such evidence would establish the existence of a *specific* contingency which would justify a departure from the *general* contingency figure otherwise used. Such evidence need not be established on a balance

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<sup>44</sup> *Graham v. Rourke* (1990) 74 DLR (4th) 1 (Ont CA), per Doherty, JA at 15.

<sup>45</sup> *Joubert v. Rosetown (Town)* (1987) 60 Sask LR 200 (Sask CA); *Fobel v. Dean* (1991) 83 DLR (4th) 385 (Sask. CA) at 419.

of probability, but "the evidence must be capable of supporting the conclusion that the occurrence of the contingency is *a realistic as opposed to a speculative possibility*."<sup>46</sup>

85. For example, all of us may run a statistical chance of committing suicide; but where there is medical evidence of long-standing mental illness and severe depression, one might be entitled to use a much higher contingency, as in *Haines v. Bellissimo*,<sup>47</sup> where a 50% reduction was applied on the basis of such evidence. Similarly, in *Graham v. Rourke*<sup>48</sup> the evidence at trial established that the plaintiff as of the accident had already had a bad back, which made her susceptible to injury in any event. The trial judge refused to allow for any contingency. The Ontario Court of Appeal disagreed, observing that evidence of such a *specific* contingency warranted a 25% contingency reduction in the future loss assessment.
86. Specific contingencies need not always result in reductions. In *Bush v. Air Canada*<sup>49</sup> the trial judge balanced the usual negative contingencies with evidence from the plaintiff's employer that she was a valued and conscientious employee, which supported an argument that in the future she would likely receive a higher salary than that allowed for by the actuary; and, arguably, would be more likely to obtain a job in the event she were laid off. He accordingly did not reduce the award for future loss. While this result can be justified as a result of the "balancing approach," it is equally consistent with the approach suggested in this paper. That is, while evidence of general contingencies might in ordinary course lead to

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<sup>46</sup> *Graham v. Rourke* (1990) 74 DLR (4th) 1 (Ont CA), per Doherty, JA at p.15.

<sup>47</sup> (1977) 82 DLR (3d) 215 (Ont HC).

<sup>48</sup> (1990) 74 DLR (4th) 1 (Ont CA).

<sup>49</sup> (1992) 87 DLR (4th) 248 (NSCA).

a (modest) reduction, evidence of specific contingencies (*i.e.* a superior employee pattern) acts as a kind of set-off, effectively cancelling the reduction that would otherwise be applied.

87. In essence then there ought to be a two-step process in dealing with contingencies when calculating future loss claims:

- a. first, one determines on the basis of the plaintiff's medical and occupational history the mortality and morbidity ratings *for actuarial* purposes; that is, one determines the *general* contingency; this contingency will generally be negative and will generally be modest; and
- b. second, one determines whether there is any evidence of a *specific* contingency which would justify a higher or lower contingency than that used by the actuary, on the grounds that there is a realistic possibility that the plaintiff will in fact experience the "risk" in question.

## CONCLUSION

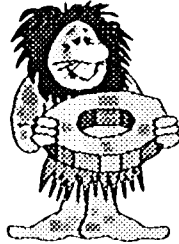
88. In conclusion, we would like to leave you will the following points:

- a. Lump sum (or PV) calculations are relatively easy to perform, and can be performed on the gross level without the use of an actuary;
- b. The important elements in an actuary's calculations can and ought to be determined *before* an actuary is retained, and include the following:
  - i. The plaintiff's pre- and post-accident life expectancy;

- ii. The amount of the annual loss to be claimed;
  - iii. The discount rate to be applied;
  - iv. Any statistical contingencies (for example, the "risks" of divorce or remarriage) that can affect the particular claim;
  - v. The level and amount of "other income" to be taken into account in determining the marginal rate of taxation for purposes of calculating the gross-up; and
  - vi. The number and amount of any tax credits or deductions which may be available to the plaintiff in order to reduce the tax otherwise payable for purposes of calculating the gross-up.
89. Once these figures are agreed upon between counsel (or determined by a trial judge), one actuary could be retained to do the actual calculations.
90. If this approach were employed the cost and time associated with a duel between two actuaries could be avoided or minimized, and the focus could remain on the real issue between the parties: the proper compensation to be paid, without windfall to the plaintiff or overburden to the defendant.

## Actuary Gus's Results

- Year 27 multiplier  
**\$16,887**
- Annual Loss  
\$12,500
- Result: \$211,087



$$\begin{array}{r} 16,887 \times 12,500 \\ \hline 1000 \\ = 211,087 \end{array}$$

## Actuary Cal's Results

**\$225,212**  
(± actuarial fee)



## But Assumptions Can Be Important

*Example: Tax Gross-Up*

*Male 35 - Constant Annual Loss to 70*

- #1 Interest: 7½% for 15 years & 6% thereafter  
27% Tax Rate/100% Mortality/No Other Contingencies  
31.2%
- #2 Interest: 5%  
200% Mortality: Otherwise same as #1  
20.2%
- #3 Divorce & Remarriage (Deceased Spouse Age 35):  
Otherwise same as #2  
10.3%

Male

Plaintiff	
Date of Birth	21-Nov-57
Age	40.000
Mortality	CNSOM
Rating	100%
Remarriage	(none)
Weight	0%
Divorce	(none)
Weight	0%
CPPdis	MALE
Weight	100%

Fel  
33

Casename:	John Doe
Accident Dat	21-Nov-97
Legal Firm	

Calculation Date:	21-Nov-97
Current Date:	27-Oct-97

Tax Rate	27.00%		0.00%		0.00%
	Rate	Years	Rate	Years	Rate
Net Discount rate	2.50%	99	0.00%	0	0.00%
Nominal Rates	5.00%	99	0.00%	0	0.00%
Gross-up Rates	1.1821%	99	0.0000%	0	0.0000%

Integral Age Interval	YES
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Can Tell  
to Male

Period Begins	Age at end of period (Plaintiff)	Time Period	Annual Loss	Not Grossed-Up		Grossed-Up		Gross-up Percent	
				Capitalized Value		Capitalized Value		No Dis	CPP Dis
				No Dis	CPP Dis	No Dis	CPP Dis		
21-Nov-97	41.000	1.00	\$ 1,000.00	\$ 987	\$ 988	\$ 993	\$ 992	0.6%	0.6%
21-Nov-98	42.00	2.00	\$ 1,000.00	\$ 1,948	\$ 1,942	\$ 1,973	\$ 1,967	1.3%	1.3%
21-Nov-99	43.00	3.00	\$ 1,000.00	\$ 2,884	\$ 2,871	\$ 2,939	\$ 2,926	1.9%	1.9%
21-Nov-00	44.00	4.00	\$ 1,000.00	\$ 3,794	\$ 3,771	\$ 3,892	\$ 3,869	2.6%	2.6%
21-Nov-01	45.00	5.00	\$ 1,000.00	\$ 4,681	\$ 4,644	\$ 4,832	\$ 4,794	3.2%	3.2%
21-Nov-02	46.00	6.00	\$ 1,000.00	\$ 5,544	\$ 5,490	\$ 5,758	\$ 5,702	3.9%	3.9%
21-Nov-03	47.00	7.00	\$ 1,000.00	\$ 6,383	\$ 6,309	\$ 6,671	\$ 6,593	4.5%	4.5%
21-Nov-04	48.00	8.00	\$ 1,000.00	\$ 7,199	\$ 7,101	\$ 7,570	\$ 7,465	5.2%	5.1%
21-Nov-05	49.00	9.00	\$ 1,000.00	\$ 7,992	\$ 7,866	\$ 8,456	\$ 8,319	5.8%	5.8%
21-Nov-06	50.00	10.00	\$ 1,000.00	\$ 8,763	\$ 8,603	\$ 9,327	\$ 9,153	6.4%	6.4%
21-Nov-07	51.00	11.00	\$ 1,000.00	\$ 9,512	\$ 9,314	\$ 10,185	\$ 9,967	7.1%	7.0%
21-Nov-08	52.00	12.00	\$ 1,000.00	\$ 10,239	\$ 9,997	\$ 11,029	\$ 10,760	7.7%	7.6%
21-Nov-09	53.00	13.00	\$ 1,000.00	\$ 10,945	\$ 10,653	\$ 11,858	\$ 11,530	8.3%	8.2%
21-Nov-10	54.00	14.00	\$ 1,000.00	\$ 11,629	\$ 11,281	\$ 12,674	\$ 12,278	9.0%	8.8%
21-Nov-11	55.00	15.00	\$ 1,000.00	\$ 12,293	\$ 11,880	\$ 13,474	\$ 13,000	9.6%	9.4%
21-Nov-12	56.00	16.00	\$ 1,000.00	\$ 12,935	\$ 12,450	\$ 14,259	\$ 13,698	10.2%	10.0%
21-Nov-13	57.00	17.00	\$ 1,000.00	\$ 13,557	\$ 12,992	\$ 15,029	\$ 14,368	10.9%	10.6%
21-Nov-14	58.00	18.00	\$ 1,000.00	\$ 14,159	\$ 13,505	\$ 15,784	\$ 15,012	11.5%	11.2%
21-Nov-15	59.00	19.00	\$ 1,000.00	\$ 14,740	\$ 13,990	\$ 16,522	\$ 15,627	12.1%	11.7%
21-Nov-16	60.00	20.00	\$ 1,000.00	\$ 15,301	\$ 14,445	\$ 17,244	\$ 16,213	12.7%	12.2%
21-Nov-17	61.00	21.00	\$ 1,000.00	\$ 15,841	\$ 14,872	\$ 17,948	\$ 16,769	13.3%	12.8%
21-Nov-18	62.00	22.00	\$ 1,000.00	\$ 16,362	\$ 15,271	\$ 18,635	\$ 17,296	13.9%	13.3%
21-Nov-19	63.00	23.00	\$ 1,000.00	\$ 16,862	\$ 15,642	\$ 19,304	\$ 17,792	14.5%	13.7%
21-Nov-20	64.00	24.00	\$ 1,000.00	\$ 17,341	\$ 15,986	\$ 19,955	\$ 18,259	15.1%	14.2%
21-Nov-21	65.00	25.00	\$ 1,000.00	\$ 17,801	\$ 16,304	\$ 20,586	\$ 18,695	15.6%	14.7%
21-Nov-22	66.00	26.00	\$ 1,000.00	\$ 18,241	\$ 16,602	\$ 21,197	\$ 19,110	16.2%	15.1%
21-Nov-23	67.00	27.00	\$ 1,000.00	\$ 18,661	\$ 16,887	\$ 21,789	\$ 19,511	16.8%	15.5%
21-Nov-24	68.00	28.00	\$ 1,000.00	\$ 19,061	\$ 17,158	\$ 22,360	\$ 19,898	17.3%	16.0%
21-Nov-25	69.00	29.00	\$ 1,000.00	\$ 19,441	\$ 17,416	\$ 22,910	\$ 20,270	17.8%	16.4%
21-Nov-26	70.00	30.00	\$ 1,000.00	\$ 19,802	\$ 17,660	\$ 23,438	\$ 20,629	18.4%	16.8%
21-Nov-27	71.00	31.00	\$ 1,000.00	\$ 20,143	\$ 17,891	\$ 23,944	\$ 20,972	18.9%	17.2%
21-Nov-28	72.00	32.00	\$ 1,000.00	\$ 20,465	\$ 18,109	\$ 24,428	\$ 21,299	19.4%	17.6%
21-Nov-29	73.00	33.00	\$ 1,000.00	\$ 20,767	\$ 18,314	\$ 24,888	\$ 21,611	19.8%	18.0%
21-Nov-30	74.00	34.00	\$ 1,000.00	\$ 21,050	\$ 18,506	\$ 25,325	\$ 21,907	20.3%	18.4%
21-Nov-31	75.00	35.00	\$ 1,000.00	\$ 21,314	\$ 18,685	\$ 25,737	\$ 22,187	20.8%	18.7%
21-Nov-32	76.00	36.00	\$ 1,000.00	\$ 21,559	\$ 18,851	\$ 26,125	\$ 22,450	21.2%	19.1%
21-Nov-33	77.00	37.00	\$ 1,000.00	\$ 21,786	\$ 19,005	\$ 26,488	\$ 22,696	21.6%	19.4%
21-Nov-34	78.00	38.00	\$ 1,000.00	\$ 21,994	\$ 19,146	\$ 26,827	\$ 22,925	22.0%	19.7%
21-Nov-35	79.00	39.00	\$ 1,000.00	\$ 22,184	\$ 19,275	\$ 27,139	\$ 23,137	22.3%	20.0%
21-Nov-36	80.00	40.00	\$ 1,000.00	\$ 22,357	\$ 19,392	\$ 27,427	\$ 23,332	22.7%	20.3%
21-Nov-37	81.00	41.00	\$ 1,000.00	\$ 22,512	\$ 19,497	\$ 27,690	\$ 23,510	23.0%	20.6%
21-Nov-38	82.00	42.00	\$ 1,000.00	\$ 22,651	\$ 19,592	\$ 27,927	\$ 23,672	23.3%	20.8%
21-Nov-39	83.00	43.00	\$ 1,000.00	\$ 22,775	\$ 19,675	\$ 28,141	\$ 23,816	23.6%	21.0%
21-Nov-40	84.00	44.00	\$ 1,000.00	\$ 22,883	\$ 19,749	\$ 28,331	\$ 23,945	23.8%	21.3%
21-Nov-41	85.00	45.00	\$ 1,000.00	\$ 22,977	\$ 19,813	\$ 28,499	\$ 24,059	24.0%	21.4%
21-Nov-42	86.00	46.00	\$ 1,000.00	\$ 23,059	\$ 19,868	\$ 28,645	\$ 24,158	24.2%	21.6%
21-Nov-43	87.00	47.00	\$ 1,000.00	\$ 23,128	\$ 19,914	\$ 28,771	\$ 24,243	24.4%	21.7%
21-Nov-44	88.00	48.00	\$ 1,000.00	\$ 23,186	\$ 19,954	\$ 28,878	\$ 24,316	24.6%	21.9%
21-Nov-45	89.00	49.00	\$ 1,000.00	\$ 23,234	\$ 19,987	\$ 28,969	\$ 24,377	24.7%	22.0%
21-Nov-46	90.00	50.00	\$ 1,000.00	\$ 23,273	\$ 20,013	\$ 29,043	\$ 24,428	24.8%	22.1%
21-Nov-47	91.00	51.00	\$ 1,000.00	\$ 23,305	\$ 20,035	\$ 29,104	\$ 24,469	24.9%	22.1%
21-Nov-48	92.00	52.00	\$ 1,000.00	\$ 23,330	\$ 20,052	\$ 29,153	\$ 24,502	25.0%	22.2%
21-Nov-49	93.00	53.00	\$ 1,000.00	\$ 23,350	\$ 20,065	\$ 29,192	\$ 24,529	25.0%	22.2%
21-Nov-50	94.00	54.00	\$ 1,000.00	\$ 23,365	\$ 20,075	\$ 29,222	\$ 24,549	25.1%	22.3%
21-Nov-51	95.00	55.00	\$ 1,000.00	\$ 23,376	\$ 20,083	\$ 29,245	\$ 24,564	25.1%	22.3%
21-Nov-52	96.00	56.00	\$ 1,000.00	\$ 23,384	\$ 20,089	\$ 29,261	\$ 24,576	25.1%	22.3%
21-Nov-53	97.00	57.00	\$ 1,000.00	\$ 23,390	\$ 20,093	\$ 29,274	\$ 24,584	25.2%	22.4%
21-Nov-54	98.00	58.00	\$ 1,000.00	\$ 23,394	\$ 20,095	\$ 29,282	\$ 24,590	25.2%	22.4%
21-Nov-55	99.00	59.00	\$ 1,000.00	\$ 23,397	\$ 20,097	\$ 29,288	\$ 24,594	25.2%	22.4%
21-Nov-56	100.00	60.00	\$ 1,000.00	\$ 23,399	\$ 20,099	\$ 29,292	\$ 24,597	25.2%	22.4%