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Personal Injury and
Impairment Damages
(for adults and children)

**AN INVESTIGATION INTO THE VALIDITY OF LIFE TABLES
USED FOR THE CALCULATION OF PERSONAL INJURY
DAMAGES**

A thesis submitted in partial fulfilment of the
requirements for the degree of

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Abstract:

Currently in South Africa when an individual is injured due to the acts of another they may claim damages for the losses which they may incur. These can be claimed from a variety of institutions, such as the Road Accident Fund, Workmen's compensation or an individual's private insurance. In all the afore-mentioned cases the calculation of damages are along the same lines, whereby the damages are quantified first, and thereafter reduced to reflect future possibilities that may occur.

Traditionally future losses are reduced to reflect the possibility that the claimant may die at an age prior to the loss being incurred. To account for this risk awards for future losses are reduced using standard South African mortality tables. The set of tables currently being used were calculated from the 1985 South African census, and as such encapsulate the mortality of the population at that period. When the tables were calculated no reliable statistics were available for the Black population the result is that the tables currently being used do not contain a sample of the majority of the population.

The thesis first examines, in detail, the calculation methods used to arrive at the value for damages to be awarded using the current set of life tables. Thereafter an analysis is conducted looking at differences between racial groups in the country and geographic locations, in order to uncover the mortality differences between groups to confirm or disprove the proposition that the exclusion of the Black population results in lower levels of mortality being reflected in the South African 1984-1986 life tables. This is accompanied by a review of mortality trends in South African since 1986. Following from the findings of the expected increase in mortality since 1986, alternative life tables shall be used to show what impact these would have on the calculation of damages. Due to the fact that none of the alternatives return satisfactory results, structured settlements shall be reviewed to illustrate how the shortcomings of the lump sum approach can be circumvented, and altogether avoid the problems of out dated life tables being used as a basis for damage calculations.

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write in a book.*

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Chapter 1: Introduction:

1.1 Context of the Study:

When an individual is injured through the negligence of another he/she may not only suffer a loss due to the medical cost incurred through treatment of the injury, but also a loss of earnings (Koch 1993:207). A loss of earning may be defined as both past income lost due to recovery from the injury, loss of future earning potential due to persisting effects from the injury and lastly, losses that the claimant will have to carry as a result of expenses that he/she will have, such as future medical treatment (Koch 1993:207).

In order for the injured party to receive fair compensation it is required that the total cost of the losses be determined. When calculating these costs there is often a fair amount of prediction required, to reduce inaccuracies experts are called upon to evaluate and quantify the expected expenses. An example of this would be the use of a medical expert to determine the percentage of disability in an accident victim (Koch 2002:70) and hence, what sort of damages should be awarded. When the claim is limited to only past loss of earnings and medical costs, the settlement amount is relatively straight-forward, as these figures can be determined from the claimant's employer and medical bills. When future income has to be determined the process is not as straight-forward.

For the settlement amount to be fair, the claimant must be compensated for what his/her expected income would have been from the date of the injury until his/her death. It is however, impossible to determine at what age an individual will die, and thus actuarial life tables are used to determine the chance of early death for each future year. This chance of early death is then used as a percentage deduction for the expected earnings for that year (Koch 2002:72). To determine the chance of early death Koch (2001:82) suggests the use of a modified Murfin method where by the person's chance of surviving until a specific age can be calculated using the proposed life tables.

There is one stumbling block to the method, the fact that it relies upon modified life tables derived from the South African Life Tables 1984 – 1986 (SALT 84-86) (Koch 2002:89). The SALT 84-86 tables were calculated by the Central Statistics Service as part of the 1985 census (Koch 2002:89). Since 1985 there have been great changes within South Africa, as such questions must be asked as to whether mortality conditions from 1986 should still be applied to the current South African population.

Human Immune Deficiency Virus/Acquired Immune Deficiency Syndrome (hereafter HIV/AIDS) has had a major impact on the country and its population. Koch states that the tables used in the above method are “only relevant for persons who do not test positive for AIDS” (Koch 2002:89). In South Africa it is questionable whether or not in a damage claim one would be able to force an HIV/AIDS test on an individual, in which case one will not know the claimants current status, there is also the risk that the claimant may contract the virus later on in life which would greatly reduce their life expectancy and accordingly their damages should be reduced.

Dorrington and Rosenberg posed similar questions when considering the Assured Life Mortality Experience (Dorrington and Rosenberg 1996:1), as to whether past mortality experiences could be considered to hold true for the current South African population. Dorrington, Moultrie and Timaeus concluded that the mortality rates estimated in 1985 seem to be low for males (Dorrington, Moultrie and Timaeus 2004:67). More importantly it has been suggested that whilst mortality for White and Indian males has remained constant it seems to have increased rapidly for Black males since 1995 (Dorrington, Moultrie and Timaeus 2004:67), a situation that is mirrored in the female populations (Dorrington *et al* 2004:68). These findings should be enough to cast doubt on the continued use of the tables, however one last fact also bears consideration.

The tables are based upon racial classification, although they have been modified to be used in conjunction with income brackets rather than with racial groupings. Due to the way in which they were calculated, the Black population was not included in the calculation (Koch 2001:89) (Statistics South Africa 2000:v), this means that a vast majority of the population were excluded in the calculations, which brings into question their use in our now integrated country.

Due to the number of issues that are required to be addressed in order to cover the topic in adequate detail the thesis should be seen a study on the law and economics applied to damage calculations in South Africa

1.2 Goals of the Research:

The primary goal of the research is to determine whether or not the current set of life tables as set out by Koch (2002:90-101) should still be considered to be representative of mortality currently experienced by the South African population, or if alternative tables calculated from more recent data sources could provide a more accurate representation of the true mortality being faced by the South African population, and if so what impact this will have on the levels of damages paid out to claimants as compensation.

A subsidiary goal of the research is to show how rather than utilising lump sum settlements, based on mortality tables which may not truly reflect the mortality of the population, claimants can be better served through the use of structured settlements paying out at a periodic interval via an underlying annuity, while at the same time providing advantages to the defendants of an action.

1.3 Structure of the Thesis:

Following from this introduction the research is made up of a further 6 chapters. What follows is an overview of each chapter briefly highlighting what will be covered in each.

Chapter 2 provides an introduction to the different sections under which damages are paid, as well as the amount that the various types of damages have contributed to the total damages awarded by the Road Accident Fund. The chapter defines how the total damages are broken down into manageable sections to allow for increased accuracy when arriving at the level of the award to be made.

Chapter 3 looks at the theory behind how individual heads of damages are calculated and provides a step by step calculation of a hypothetical damage calculation based on the currently utilized SALT 84-86 tables.

Chapter 4 explains what life tables are, and what purpose they serve. A critical analysis shall then be done comparing education and housing types among the provinces and racial groups to highlight the differences faced by the population and hence the potential short comings of the SALT 84-86 life tables which did not include a representation of the Black population group due to lack of mortality data at the time. It concludes by looking at the estimated trends in South African mortality since the SALT 84-86 tables.

Chapter 5 introduces four alternative sets of life tables that have been calculated for the South African population since the SALT 84-86 tables. These are applied to the hypothetical example from chapter 3 to illustrate the impact the different mortality estimates can have on calculated damages. At the same time the calculations raise questions to the way that the SALT 84-86 tables have been aligned to income groups, so as to avoid an analysis based solely on racial grounds.

Chapter 6 looks at structured settlements as an alternative to the lump sum compensation used in South Africa. The calculation of a structure settlement is performed to show how simple it is. This is followed by an investigation into the advantages and disadvantages that the approach provides to both the claimants and defendants.

Chapter 7 provides a summary of the conclusions from the study.

Chapter 2: Heads of Damages.

2.1 Introduction:

To understand the impact that out-dated life tables could have on damages awarded to claimants it is necessary to understand the concept of a delict and the resulting damages arising out of a delictual claim. As an introduction to the topic, what shall follow is a brief overview of the South African law of delict and the accompanying law of damages, including what have been earmarked as the two impediments to the law. The first impediment relates to the definition of the different heads of damages, while the second relates to whether damages should be based on an individual basis or from the perspective of a 'typical person'.

2.2 The South African Law of Delict:

A delict can be defined as the "wrongful and culpable act which has harmful consequences" (Neetling, Potgieter and Visser 2001:211). In South Africa the law of delict and the law of damages are based in the Common Law, and stems from both Roman-Dutch law and English common law (Visser and Potgieter 2003:9). Under South African law there are three "pillars" of delict law, "the *actio legis Aquiliae*, the *actio iniuriarum* and the action for pain and suffering" (the Germanic Remedy) (Visser and Potgieter 2003:9).

The three actions enable a victim of a delict to claim for different types of damage inflicted upon themselves or their personality. *Actio legis Aquiliae* (Aquilian action) allows for the recovery of loss of income and medical expenses (van der Walt and Midgley 1994:13). The *Actio iniuriarum* relates to damage to a persons' personality and the compensation paid out as a result (van der Walt and Midgley 1994:13). Lastly, the action for pain and suffering relates to compensation that is to be paid out due to pain and physical disfigurement as a result of a wrongful action (Van der Walt and Midgley 2003:13). In terms of what follows only the Aquilian action and the action for pain and suffering will be considered.

For an injured party or the family of the deceased to bring about a civil claim against the party responsible for the harm (in terms of either the Aquilian action or action for pain and suffering), they are required to prove the liability of the party responsible for the harm/the defendant. In doing so they must prove that harm was incurred/inflicted, there was wrongful conduct on the part of the defendant and further more that there is a link between the harm and the actions of the defendant and that it was the defendant that was at fault (Road Accident Fund, 2002A:106).

Should the defendant be found to be at fault, the compensation that is received by the complainant is termed 'damages'. Damages are an attempt by the courts to rectify the wrongs of the defendant, by the way of a monetary payment. The award of damages are an attempt to place the victim in a position similar to which he/she would have been had the harm not occurred. To do this the court has to look at the wrongful act of the defendant and what the situation would have been had there been no wrongful act (Koch 1993:59) so as to achieve the fullest possible compensation (Visser and Potgieter 2003:4). In doing this they assess what the victim's life would have been like if the act had not been committed. Based on this information the courts award damages that they feel are adequate in order to place the victim in a similar position.

Visser and Potgieter (2003:15-16) identify several problematic areas in the South African law of damages; these include the definition of concepts and the assessment of loss of and income and support.

There are several aspects which greatly complicate the assessment process. These problems include the need to predict the future in terms of a person's possible promotion; pay rises, as well as what can be considered adequate compensation for disabilities. Before delving into these intricacies, the matter can be greatly simplified by a clearer definition of the different types of damages that may be awarded.

2.3 Patrimonial and Non-patrimonial Losses:

The broadest classification into which heads of damages are divided is into patrimonial and non-patrimonial losses. Koch (1993:59) draws a distinction between the two as

“Patrimonial losses are those which can be proved with direct evidence of the loss of money or the loss of goods upon which society places a monetary value. Non-patrimonial losses, such as pain and suffering and the loss of the amenities of life are those to which society outside of the courtroom does not ascribe a demonstrable commercial value”.

With this in mind patrimonial losses can be loosely defined as those to which a market price can be attached, where as for non-patrimonial losses there is no established market (and hence market price), and thus the only place in which a value can be placed on them is inside a courtroom. The reason that a court can place a value on these losses, despite the lack of a market value, is by looking at the awards granted for similar events/losses in court (Koch 1993:60).

This results in a situation where it is theoretically possible to achieve perfect compensation in the case of patrimonial losses. However, seldom is this possible in the case of non-patrimonial losses i.e. there are no instances of perfect compensation disabilities (Koch 1993:60).

2.3.1 Patrimonial Losses:

Grouped under patrimonial losses there are three major heads of damage:

- Loss of Earnings;
- Loss of Support; and
- Medical Expenses.

2.3.1.1 Loss of Earnings:

Loss of earnings relates to what the victim could have earned had the incident not occurred. In this regard the losses can be split between past and future losses. The dividing point between the two is taken as the point in time from which the compensation calculation is to be done.

Past loss of earnings:

Past loss of earnings relate to income that the victim did not earn as a result of the incident that gave rise to the damages. These losses can be due to the victim not being able to work due to hospitalisation and recovery time or even as a result of the injuries that may have resulted in the victim becoming unemployed. These damages are claimed as special damages as they occur before the trial and can most often be calculated with precision (Visser and Potgieter 2003:21).

Often in seeking compensation for past loss of earnings it is dependant on the victim being able to prove such losses (Road Accident Fund 2002B:999). Koch (1993:213) disputes this due to three factors relating to the assessment of lost earnings. Firstly, in the case of an individual who is self-employed, the assessment is based on past performances, however, if the person has only been self-employed for a short period of time, then these short term profits are not indicative of what may have been earned over a longer period (Koch 1993:213). Secondly, during times of depression there is less chance of an individual maintaining employment, thus past earning before injury may not be guaranteed due to the possibility of not finding employment (Koch 1993:213). Koch's third point is that the employer may go out of business and thus once again past earnings before the injury may not have continued even if the incident had not occurred. A fourth problem has also emerged in South Africa and this is due to the large informal economy that has emerged. Often those employed in the informal economy find it difficult to prove their past earnings, and thus are unsuccessful in their claims for past losses (Road Accident Fund 2002B:1004). This is aptly highlighted by Koch in the 2002 Quantum Yearbook:

“In *Bridgeman NO v RAF* 2000 5 ... the court ruled that due to the claimant's failure to adduce available evidence that would have assisted the Court with assessing past loss of earnings, no award should be made under this head. As an actuary I am all too (sic) well aware of the inadequacy of evidence supplied by many claimant attorneys as regards past loss (sic).”

(Koch 2002:67)

The difficulty with this section of the job market arises out of the fact that often no financial records are kept and the individuals are not registered for income tax making

proof of past earnings close on impossible. Individuals who fall into this category could include taxi drivers, hawkers, and people who work from home or on the side of the road. Figure 2.1 indicates the division between compensation paid out for past loss of earnings between those employed in the formal and informal economy.

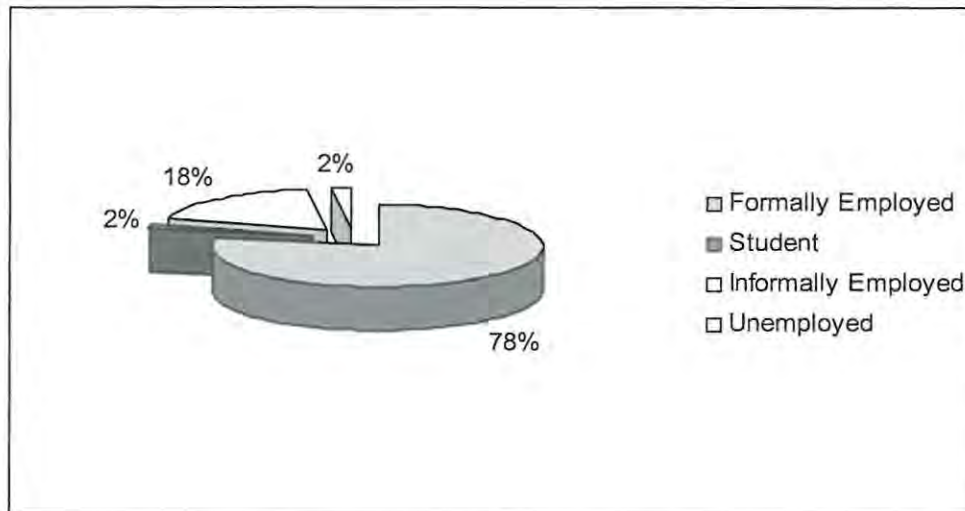


Figure 2.1 Employment status of claimants who received compensation for past loss of earnings.

Source: Road Accident Fund 2002C:144

In terms of the amount that past loss of earnings typically contributes towards the total damages claim, statistics are not readily available. An indication is provided though by the Road Accident Fund. Table 2.1 indicates the contribution past loss of earnings has made in damages awarded to claimants who were successful in being awarded damages for past loss of earnings.

	1998	1999	2000	2001
Amount (R millions)	54	74	84	106
% of total compensation	4.9%	5.1%	4.8%	5.2%

Table 2.1 Compensation paid in respect of past loss of earnings 1998 – 2001.

Source: Road Accident Fund 2002B:1001

With regard to the above, in 1999 only 15.7% of finalised claims to the Road Accident Fund contained past loss of earnings compensation and only 53.4% of claims lodge relating to past loss of earning were paid out. This low percentage has

been attributed to several factors namely “the claimant was not in employment at the time of the accident, the injuries sustained by the claimant were insufficient to necessitate time off work, the claimant was unable to substantiate either employment or income, the claimant may have been absent from work as a result of the injuries but may have suffered no loss because this absence fell within a period of authorised sick leave” (Road Accident Fund 2002B:1001).

Future loss of earnings:

While past loss of earnings compensates for what has already been lost by the victim in terms of earnings, future loss of earnings attempts to calculate the total loss of earnings that the victim will incur during the course of the rest of his/her life due to the side effects from the incident. The damages awarded in respect of the above fall under general damages (Visser and Potgieter 2003:21).

As in the case of past losses the onus of proof is placed firmly on the claimant (Koch 1993:232). Proving future losses can at times be extremely challenging, and arriving at a figure to be paid out in damages can involve a fair amount of guess work. To limit inaccuracies, employers are often called upon to provide evidence as to the future earnings that the employee would have earned had the incident not occurred. The information needed is often obtained by getting the employer to fill out an Earnings Questionnaire stating the remuneration package that the employee earned prior to the incident, as well as making value judgments as to what the victims chances of promotion and pay rises would have been together with approximate dates these would have occurred (Koch 2002:53-61). Getting these forms filled out correctly can also pose a problem as set out by Koch (2001:63) where he relates the problems often encountered such as forms being completed inaccurately, information becoming dated due to the long time periods between employment and the claim calculation as well as the completion of the form being left to individuals who are not truly competent to do so.

Additionally, reliance on the employer alone can pose several other problems. Some employers refuse to provide the required information. This problem could be solved by the employer being subpoenaed to give evidence in court; it can though prove a costly affair for the claimant (Koch 1993:64). Further problems arise from the fact

that the employers “paint an unduly rosy picture in the knowledge that they will never be called upon to put their money where their mouth is” (Koch 1993:229). In light of this sometimes responses are checked with the use of an industrial psychologist (Koch 1993:229).

Figure 2.2 shows the division between different employment types that were awarded compensation for future loss of earnings. It can be seen that 1% of the claimants are classified as preschool children. In assessing this category of the claimant’s future potential earnings an alternative bench mark is required. Often the benchmark used is to look at the earnings of a same sexed parent (Koch 1993:230) and then attribute similar earnings to the dependant child. This is by no means an ideal situation especially when the child is of a very young age and a non-white. Koch recognized this fact and indicated that due to the possibility to “raise (sic) up above the family background due to upward social mobility of non whites” that estimates need to take into account the very realistic possibility that a child’s income will be above that of his/her parents (Koch 1993:230).

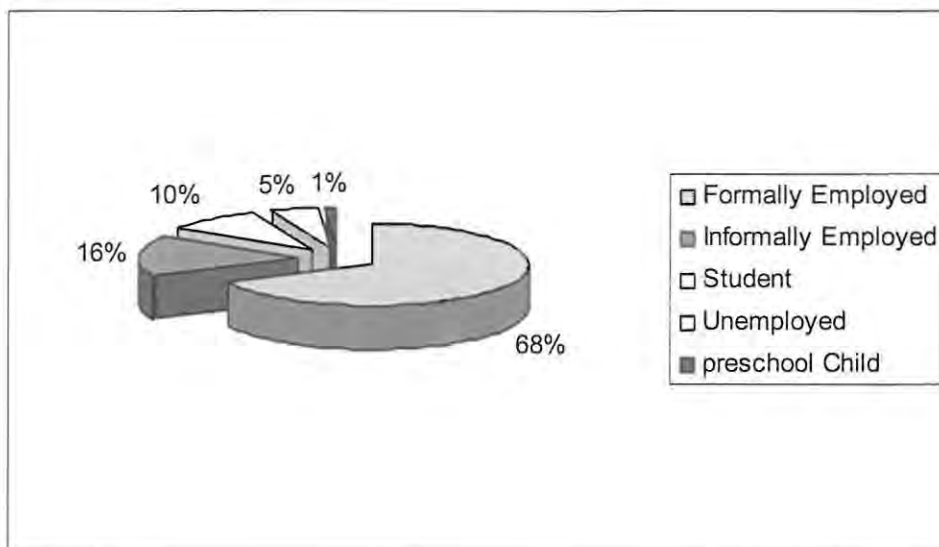


Figure 2.2 Employment status of claimants who received compensation for future loss of earnings.

Source: Road Accident Fund 2002C:147

The contribution of future loss of earnings to total damages paid out by the Road Accident Fund is shown in Table 2.2. It can be seen that since 1998 the contribution

of future loss of earning to total compensation has increased from 14.4% to 18.5%. On the surface this seems to be a promising statistic, however, it must be noted that only 36.4% of claims relating to future loss of earnings were paid out. This has been attributed to the highly speculative nature of the class of damages (Road Accident Fund 2002B:1002), an understandable, although, avoidable situation if investigations were standardized.

	1998	1999	2000	2001
Amount (R millions)	159	242	269	380
% of total compensation	14.4%	16.7%	15.4%	18.5%

Table 2.2 Compensation paid in respect of future loss of earnings 1998 – 2001.

Source: Road Accident Fund 2002:1001

When compensation for both past and future loss of earnings are combined it can be seen that they make up a substantial part of the total compensation paid out by the Road Accident Fund. Table 2.3 shows that compensation for total loss of earnings has contributed to between 19.4% and 23.6% of the total compensation paid out by the Road Accident Fund.

	1998	1999	2000	2001
Amount (R millions)	213	316	353	486
% of total compensation	19.3%	21.7%	20.3%	23.6%

Table 2.3: Compensation paid in respect of total loss of earnings 1998 – 2001.

Source: Road Accident Fund 2002:1001.

The increasing contribution that loss of earnings claims is making towards total damages (as illustrated by claims awarded by the Road Accident Fund) shows the importance that should be placed upon its careful and accurate calculation. It is after all this amount of the damages awarded that are supposed to support disabled claimants for the rest of their lives.

2.3.1.2 Loss of Support:

A closely related claim category to loss of earnings is that for loss of support. The difference between loss of earnings and loss of support rests upon the identity of the claimant. If the claim is lodged by an individual who was directly injured in the event then damages will be paid out under loss of earnings. If however the victim died in the event and his/her dependants lodged claims as a result of the deceased being a breadwinner, then these claims are paid out in terms of loss of support. Loss of support claims are calculated in a similar way to those of loss of earnings, and thus the same problems are faced. There are also an additional two hurdles that claimants face when applying for loss of support and these stem from the motivation behind loss of support payments.

When considering loss of support claims, the motivation behind the payment is slightly different to that for loss of earnings. When considering loss of support claims the courts attempt to place the claimant in “as good a position as regards to maintenance, as they would have been had the deceased had been killed” (Koch 1993:265). For a claim for loss of support to be successful the claimant must be able to show firstly, that they have a right to claim support from the deceased. Secondly, it must be shown that the deceased would have provided the support (Koch 1993:268). In addition there are several other requirements that must be met, these include:

- How much support was previously provided;
- The number of years that the claimant could have been expected to enjoy this support from the deceased;
- The contribution of the deceased to the household expenses;
- Income of the surviving spouse; and
- Particulars of the surviving spouse and minor children (so as to assess their probabilities of remarriage and self sufficiency).

(Koch 1993:279, Koch 2002:53, Road Accident Fund 2002B:1068)

The additional requirements have the effect of reducing the number of successful claims that are paid out. This can be shown by looking at the compensation paid out by the Road Accident Fund in terms of loss of support claims, both past and future, in relation to the number of claims lodged versus those that were paid out for loss of earning claims. It can be shown that in 1999, 84% of claims submitted for non-fatal claims were successful (Road Accident Fund 2002B:1072). For those concerning loss of support of the 8310 claims lodged by dependants, only 5327 (64%) tried to claim for loss of support of which only 2674 were successful (32% of total claims and 50% of claims directly for loss of support) (Road Accident Fund 2002C:151).

	1998	1999	2000	2001
% of total compensation	4	4	4	4

Table 2.4 Compensation paid in respect of past loss of support 1998 – 2001.

Adapted from: Road Accident Fund 2002A:168-169

Looking at compensation paid out for past loss of support, by the Road Accident Fund, it can be seen that payouts for past loss of support make up a small portion of total compensation paid out (which is not surprising considering the onerous requirements). If one considers who the compensation was paid out to (as shown in figure 2.3) it can be seen that the vast majority of claimants were the spouse of the deceased. It should be noted that the category listed in figure 2.3 as ‘Other’ generally refers to curators who lodge claims on the behalf of minors (Road Accident Fund 2002C:153).

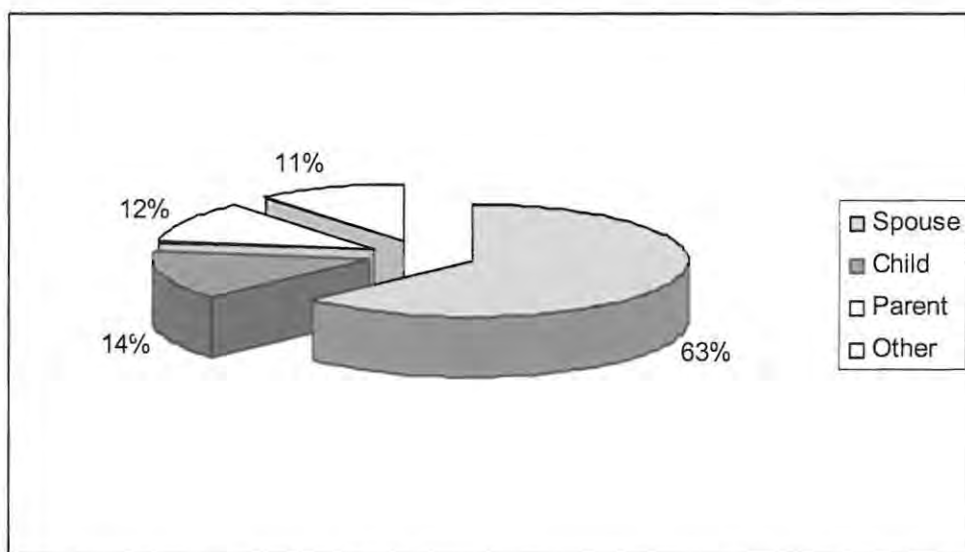


Figure 2.3 Relationship of claimant to deceased in past loss of support claims.

Source: Road Accident Fund 2002C:153

A similar trend to that indicated by figure 2.3 is seen for claimants for future loss of support as shown in figure 2.4. In a similar fashion to compensation paid out in terms of past and future earnings, the compensation paid out for future support was substantially higher than that paid out in terms of past support compensation. This is to be expected as the future support payments are meant to pay for the expenses of the dependants for the remainder of their lives in the case of spouses. The levels of compensation for future support can be seen in table 2.5

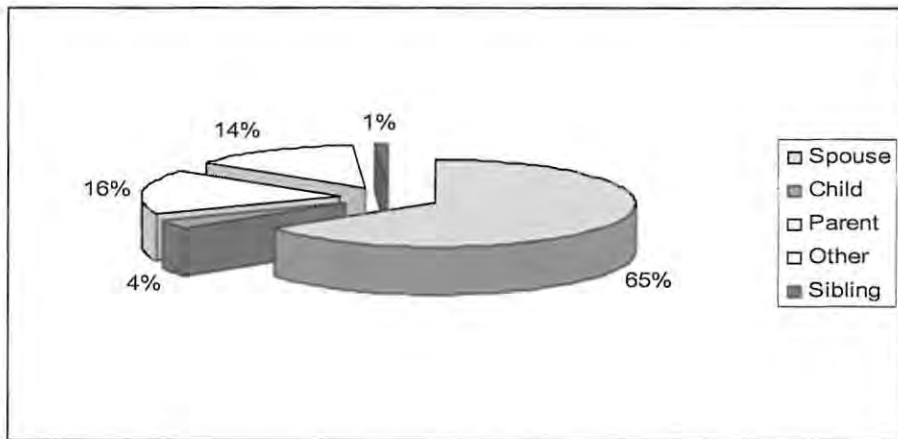


Figure 2.4 Relationship of claimant to deceased in future loss of support claims.

Source: Road Accident Fund 2002C:154

	1998	1999	2000	2001
% of total compensation	12	11	12	11

Table 2.5 Compensation paid in respect of future loss of support 1998 – 2001.

Adapted from: Road Accident Fund 2002A:168-169

2.3.1.3 Medical Expenses:

In the event of an accident, it is not unlikely that the victim will become injured and will require medical attention. In the South African context it is possible for a claimant to reclaim this expenditure from the defendant under the heads of damages: Medical expenses. One restriction is that the claimant is only able to claim for “reasonable medical expenses” (Road Accident Fund 2002A:793). As to what constitutes these “reasonable expenses”, Koch (1993:243) explains that a claimant is entitled to attention from a private practitioner, despite the fact that they could receive free treatment from a state hospital. However in another article he has also stated that “It is unreasonable to prognosticate (predict/forecast) expenses based on private medical care if the victim will in all likelihood make use of the services of a provincial hospital.”(Koch 2002:73). Thus it seems that what constitutes reasonable depends upon each case. If a victim can show that they always used to only use private treatment before the incident then it would be reasonable for them to continue

using such services. However, for someone who uses state facilities, it is unlikely it would be considered reasonable for them to start using private health care, simply because some other party would be paying for the treatment. As is the case of earnings and support the heads of damages, medical expenses can be split into past and future components.

Past Medical Expenses:

As in the case of past loss of earnings, compensation under the heads of damage for past medical expenses requires proof of the expenses. Thus, the claimant can only claim compensation for that part which they were ultimately liable for. In terms of the size of claims and the compensation actually paid out, figures are hard to come by, however, the Road Accident Report volume 2 (2002:791-823) and volume 3 (2002C:141-143) do give some indication as to the compensation that was paid out between 1998 and 2001.

Of the 78,377 claims finalized by the Road Accident Fund in 1999 only 50 % of the claims included a claim for past medical expenses. From these 63.8% received compensation (Road Accident Fund 2002C:140). On average only 56.9% of the original claim size was paid out in compensation. It should be though that in more serious cases, those involving serious injury and death, the level of compensation paid out was slightly higher at 57.1% and 64.8% of the initial claim value respectively (Road Accident Fund 2002C:141).

Table 2.6 indicates that compensation in terms of past medical expenses contributed between 8 and 10 % of the total compensation paid out by the Road Accident Fund, this amounted to a total of about R792 million being paid out as compensation between 1998 and 2001 (Road Accident Fund 2002B:796)

	1998	1999	2000	2001
Amount (R millions)	80	134	165	203
% of total compensation	8	9	9	10

Table 2.6 Compensation paid in respect of past medical expenses.

Adapted from Road Accident Fund 2002A:168-169 and

Road Accident Fund 2002B:795.

Of the compensation paid out 15% was earmarked for provincial hospital expenses, 39% for other hospital expenses (i.e. not provincial hospitals) and the last 47% was for the payment of other medical expenses (Road Accident Fund 2002C:139). The category 'other expenses' included transport, medication, prosthesis and other medical devices (Road Accident Fund 2002B:793).

Future Medical Expenses:

When assessing future medical expenses the courts rely heavily on medico-legal reports as well as medical advice (Road Accident Fund 2002B:794). These reports are drawn up by medical professionals and amongst other things that they try to determine are the costs of medical procedures/equipment, the frequency of these expenses as well as the probability of them occurring (Koch 2004:69). (In addition, the professionals are often asked to give an estimate of the percentage disability of the claimant as a result of his/her injuries; this is used when calculating future loss of earnings (Koch 2003:72)).

When compensation for past and future loss of earnings was compared, it was seen that claims for past losses were more successful than those for future earnings due to the speculative nature of the claims. The same holds true for future medical expenses. It was shown above that 63.8% of claims for past medical expenses were successful and these received on average 56.95% of the original amount claimed. In total 34% of claims submitted (26 517 claims) included an appeal for future medical expenses, of these only 58.6% of these claims were successful (15 527 claims) (Road Accident Fund 2002C:142). More alarmingly, of those successful claims on average only 22.8% of the initial amount claimed was paid out in terms of compensation (Road Accident Fund 2002C:142). This meagre payout for future medical expenses has resulted in quotes such as "I still have to visit my doctor for progress, but the RAF money is finished and I am using mine" (Road Accident Fund 2002B:792) and "The money I receive is too little to cover for my son's life and present medical expenses" (Road Accident Fund 2002B:792) being used by past claimants. While it is alarming that the payouts are so greatly reduced from what was initially claimed, it is

understandable when one considers the way in which compensation for future medical expenses is calculated, (this will be discussed in chapter 3).

	1998	1999	2000	2001
Amount (R millions)	158	191	213	230
% of total compensation	16%	13%	13%	12%

Table 2.7 Compensation paid in respect of Future Medical Expenses.

Adapted from Road Accident Fund 2002A:168-169 and
Road Accident Fund 2002B:796.

As table 2.7 above shows, despite the large way in which future medical costs are reduced upon compensation, they still make up a substantial portion of total compensation.

2.3.2 Non Patrimonial Losses:

Non-patrimonial losses are paid out under the damage heading, General Damages. Koch (1993:247) sets out the rationale of general damages as being a top up payment of the lost utility suffered by a victim as a result of pain and suffering, loss of amenities, disfigurement and disability. This implies that it is a payment made to try and compensate the claimant for the effects of the action which do not entail a direct economic loss. Thus, although it is impossible to give back the leg or eye that has been lost it is possible to provide a sum of money which can be used at the claimants' discretion in an attempt to ease the loss, be this through corrective surgery or gratuitous spending.

Table 2.8 indicates the compensation paid out under the general damages heading, as well as the percentage this contributed to total compensation. It can be seen that general damages made up approximately 40% of the compensation paid, making it by far the largest contributor to total damages.

	1998	1999	2000	2001
Amount (R millions)	375	556	712	828
% of total compensation	38%	38%	41%	43%

Table 2.8 Compensation paid in respect of general damages.

Adapted from Road Accident Fund 2002A:168-169 and Road Accident Fund 2002B:1113.

“The court cannot order that the defendant redeliver to the claimant the leg or eye which he/she has lost. Mental pain and anguish which he/she has suffered cannot be obliterated. Years cannot be added to a life which has been irretrievably shortened. *Restitutio in integrum*, in its ordinary sense, is impossible.”

(Ogus 1973:194).

Due to the fact that the losses incurred through non-patrimonial losses do not have a ready market and hence market value, it would appear on the surface that assessing the level of compensation to be awarded could pose a difficult problem. A simple solution to the problem lies in the precedents set down by other judgments. In South Africa the ideal is that similar cases receive similar outcomes, as such, when possible cases are individually decided by reference to awards in comparable cases (Road Accident Fund 2002B:1109). This means that general damages awarded in cases with similar facts should be of a similar level. This as decided by the appellate division (Koch 1993:10) should result in awards not depending on the financial status of the claimant, but rather on the facts of the case. Koch (1993:10) is quick to point out though that “the courts have not been astute to abide by this ruling”. As such the courts look for guidelines that they can use in order to try and consistently place the same value on awards made under similar circumstances. Several such guidelines are available such as:

- The Judicial Studies Board Guidelines for the assessment of general damages (Road Accident Fund 2002B:1154-157).
- Road Accident Fund guidelines for the calculation of general damages (Road Accident Fund 2002B:117-1119).

- Classified listing of inflation adjusted awards (Koch 2004:31-49).

It should be noted that the first two guidelines provide only broad outlines as to injuries and what could be considered fair compensation for them; the last by Koch however provides the court with a far superior tool. It is designed to be used in conjunction with “The Quantum of damages in bodily and fatal injury cases” by Corbett and Honey (Koch 2002:4) as such details of the cases can be found so that an award is benchmarked against a similar case, in addition the damages awarded are updated yearly for inflation so that quick estimation can easily be done.

Different authors identify different categories of non-patrimonial losses. These include: pain and suffering; loss of amenities of life; loss of expectation of life and disfigurement. However, the assessment of all these damages remains as covered above.

Pain and suffering includes “pain, general discomfort and shock resulting from the bodily injury of a person, encompass both past and future pain and suffering, and include (sic) psycho symptomatic experiences of pain as well as the pain and suffering resulting from medical procedures rendered reasonably necessary as a result of the bodily injury” (Road Accident Fund 2002B:1105-1106). Visser and Potgieter (2003:100) include that pain and suffering must relate directly to the pain suffered by the claimant, irrespective of whether the claimant is more or less susceptible than the average person. This poses a problem if similar cases are to be treated in the same manner, as a figure for compensation is required for each claimant. Often the simplest solution to this problem is to group pain and suffering into categories of severity, such as little, moderate and severe and then to award compensation along a sliding scale according to these measures. However, this is in direct conflict to Visser and Potgieter as it takes into account what others feel is moderate or severe.

Loss of amenities of life is “the loss, due to bodily injury, of a claimant’s drive and capacity to participate actively in the normal activities of life, recreation and social events in which he/she or she was involved prior to such injury. It also includes the loss of sexual urge and ability, infertility, loss of prospects of marriage, loss of general health, change of personality, loss of mental faculties, neurosis, insomnia, loss of life

expectancy and the general anguish of having to cope with a disability” (Road Accident Fund 2002B:1107). Again, Visser and Potgieter have a slightly different definition, in that they include potential future losses, and exclude loss of life expectancy, neurosis and insomnia from the definition, as these are included under separate heads of damages (Visser and Potgieter 2003: 100 – 102).

Loss of expectation of life is when a “claimant’s life span has been cut short due to the injuries sustained” (Road Accident Fund 2002B:1107).

Disfigurement encompasses “all forms of facial and bodily disfigurement and mutilation and includes scars, loss of limbs, limping, facial contortions and contorted limbs. Generally, disfigurement and mutilation deal with the aesthetic aspects of bodily injury. They can also have an adverse effect on the ability to earn an income” (Road Accident Fund 2002B:1106-1107).

It can be seen from the above that even though the definitions as applied by and Road Accident Fund (2002B:1002 – 1007) and those of Visser and Potgieter (2003:99 – 102) are slightly different, the discrepancies created could result in over compensation. An example of which could be including compensation for neurosis and insomnia under both loss of amenities of life (as per Road Accident Fund 2002b:1107) and again under shock (as per Visser and Potgieter 2003:100). When considering only two opinions as to what is to be included under each section of non-patrimonial losses, these anomalies can be avoided. However, if one is to also consider the opinions given by Street (1962:59-69), Ogus (1973:196-217) and Munkman (1970:107-123) the task of assessing complete non-patrimonial losses, can become a complex task riddled with duplication and errors.

2.5 Conclusion:

It can be seen that for the purposes of this thesis that only two of the three “pillars” of South African delict are applicable. When a claim for damages, as a result of a wrongful act is lodged, those damages are classed under either the Aquilian action or an action for pain and suffering.

Damages that are paid as compensation can be classified as either patrimonial damages or non-patrimonial damages. Under patrimonial damage there are the classes: loss of earnings; loss of support and medical expenses. Each of which can be divided into a past and a future component. When calculating the past component, the claimant is required to furnish proof of what has been lost. This can prove difficult if the claimant is self employed or employed in the informal sector, as earnings from before the event may not have been sustainable. These past losses are generally paid under special damages.

Future losses are somewhat more complex to calculate as they have to allow for variables such as future unemployment, the early death of the claimant and variations in the economy. Due to the complex nature of these calculations they will be considered in isolation in the following chapter.

Non-patrimonial losses pose a separate problem to the courts. The problem revolves around the different definitions that authors place on the claim types. One area of confusion is whether compensation should regard what a typical person would suffer in terms of pain and suffering (Road Accident Fund 2002B:1105-1106) or if it should only regard what the individual suffers, regardless if they are more or less susceptible to pain (Visser and Potgieter 2003:100). A second problem arises from whether side affects such as nervosa, insomnia and shock should be compensated for. The Road Accident Fund (2002B:1107) advocates that this should be included under loss of amenities of life, while others state that it should be included under its own category, such as shock (Visser and Potgieter 2003:100 – 102). This can pose the problem of over compensation, as the claimant could be provided with compensation for the same sufferings under different parts of the damages claim. A solution would be for the introduction of standardised heads of damages, so that all those involved use a standardised definition of the different heads of damages. However, for this to occur it would require a meeting of the minds of all of those involved in the calculation of damages claims.

Chapter 3: Calculation of Damages.

3.1 Introduction:

The Appellate Division (*Southern Ins Ass Ltd v Bailey* 1984 (1) SA (98), in Visser and Potgieter 2003:408) has set out that there are two possible approaches to assess damages. The first approach is to award an amount that the Judge feels is a fair and reasonable amount. The second approach is to try and make an assessment using mathematical calculations based upon facts relevant to the case (Visser and Potgieter 2003:408). The first approach can be seen as an application of guess work, although it is often guided by past awards. As such this is often the approach used when assessing damages of a non-patrimonial nature (see chapter 2). The second approach most often rests on calculations presented by an actuary, and shall be explored below.

When considering a mathematical basis from which to assess damages, there are two different approaches that can be adopted: the Sum-Formula and the Concrete Concept of Damages. An understanding of both is necessary before looking at the mathematical approach commonly used.

The explanation of the mathematical principles involved in calculating total damages will be aided by using a hypothetical example of a partially disabled worker. (The same example will be used in Chapter 5 when the impact of using different life tables is examined).

3.2 Sum-Formula and Concrete Concept of Damages:

The sum-formula approach has traditionally formed the basis for the assessment of patrimonial losses (Visser and Potgieter 2003:64). However, as a result of its shortcomings the concrete concept of damages approach was developed. In practise most often a combination of the two approaches are used (Visser and Potgieter 2003:72).

3.2.1 Sum-Formula Approach:

The sum-formula approach is a comparative test used for the assessment of damages. It relies on the fact that if damage is done, then there will be a reduction in the claimant's patrimonial position. As such, it compares the persons patrimonial position after the wrongful act, with a hypothetical patrimony had the act not occurred (Neetling *et al* 2001:222). The approach attempts to award the claimant the difference between these two positions, in effect attempting to place the claimant in the hypothetical position they would have enjoyed had the act not taken place (Visser and Potgieter 2003:67).

There have been several criticisms directed at the sum-formula approach, the most convincing relating to the "anonymity of the sum expressing damage" (Visser and Potgieter 2003:70). This refers to the fact that at no time are individual parts of a persons patrimony examined, i.e. at no time are separate heads of damage examined and thus an anonymous sum is paid with no indication as to how that sum was arrived at. This, according to Visser and Potgieter (2003:70), is against legal practise where it is required when determining damages that the separate heads of damages be identified.

3.2.2 Concrete Concept of Damages:

The concrete concept of damages developed as a response to the short comings of the sum-formula approach. The approach involves the comparison between the claimants' patrimonial position before and after the act that causes the damage (Neetling *et al* 2001:223). The concrete approach looks at individual heads of damages and makes a comparison between the plaintiffs position before and after the act, making a comparison between "what is and what was" (Visser and Potgieter 2003:71). This means that when following the concrete approach no thought is given to a hypothetical situation in which the damage causing event did not occur. An advantage of the concrete approach is that the damages are expressed under individual heads of damages, solving the main criticism of the sum-formula approach.

Although the two approaches differ in the way in which they assess the damage, they are not mutually exclusive. Often the two approaches are used simultaneously for the different heads of damages. In the event of past losses, a concrete approach is used and the damages awarded will be the difference between the position before the act and after the act, e.g. medical bills already incurred. When considering future losses a combination of the two approaches is used. It incorporates the concrete approach, in that the separate heads are considered, but also involves a sum-formula approach as the damages will rely on a comparison between what would have been, had the act not taken place. In effect this means that although the two approaches were developed separately, they are applied in unison.

3.3 Mathematical Assessment of Damages:

As has been set out total damages awarded are made up of several separate heads of damages, as such it is possible to denote this using a simple mathematical formula, where total compensation is equal to the sum of the separate heads of damages, shown as equation 3.1 below.

$$TD = FE + FM + PE + PM + G$$

Equation 3.1

Where:

- TD is total damages
- FE is future lost of earnings
- FM is future medical expenses
- PE is past lost of earnings
- PM is past medical expenses
- G is general damages for pain and suffering

It must be noted that equation 3.1 is a gross simplification and needs to be greatly refined in order to be of any real use. What follows is an explanation of the refinements required to the model, so that it can be applied to a hypothetical damage claim.

3.3.1 Capitalisation:

Due to the fact that certain terms in the equation represent compensation for future losses (FE, FM) and the damages are awarded before the loss is actually incurred, the rational claimant would then invest the damages until such time as they are required. Thus when future losses are awarded to a claimant, the claimant receives a benefit, as the funds are provided immediately, and thus can be invested to earn a return until the funds are required to meet their allotted expenses. This would result in the damages increasing in value as a result of the return on the investment (Street 1962:115). As such, the amount that should be awarded should be discounted to its present value at an appropriate capitalisation rate, so that the amount awarded at the date of settlement can be invested and earn a return to enable it to meet the required expenses in the future. With the inclusion of capitalisation of both future loss of earnings, and future medical expenses, equation 3.1 can be amended to equation 3.2 below:

$$PV_{TD} = PV_{FE} + PV_{FM} + PE + PM + G$$

Equation 3.2

Adapted from Mather 2004:1

Where:

- PV_{TD} is Present value of total damages
- PV_{FE} is Present value of future lost of earnings
- PV_{FM} is Present value of future medical expenses
- PE is past lost of earnings
- PM is past medical expenses
- G is general damages for pain and suffering

In South Africa the capitalisation rate most commonly applied is 2.5% (Koch 2004:100). The application of a 2.5% capitalisation rate means that it is expected that an investment is able to realise a real return of 2.5% per annum. This figure is based upon the true effective rate of return as given by a return on investments of 10% per annum and an inflation rate of 7.32%, thus giving $1.1/1.0732 = 1.025$ (Koch 2003:63). However Mather (2004:2) proposes that a higher capitalisation rate be applied depending on how the damages are to be invested. If invested in a fixed deposit the suggested capitalisation rate to be applied is 6% per annum, and a rate of 9.3% per

annum be applied if the investment vehicle is to be government bonds (Mather 2004:2). A debate over the correct capitalisation rate to be applied does not fall within the scope of the thesis, and thus the standard rate of 2.5% shall be applied in all subsequent calculations. (For a more in-depth investigation of capitalisation rates see Turner 2005).

3.3.2 Contingency Deductions:

In addition to certain heads of damages being reduced due to the risk of early death, further deductions are made to account for the “contingencies and vicissitudes of life” (Street 1962:120.). Essentially, the deduction of general contingencies is left to the courts, and is based upon the assessment of how comprehensive the actuarial calculation has been regarding the risks that a claimant will encounter.

Included under the deduction for general contingencies are deductions for potential unemployment, sick leave, strikes (Street 1962:120-121) and the possibility that an expense will not be incurred or a medical procedure not be needed (Luntz 1990:282).

This means the contingencies can be deducted under each separate head of damage and are generally given as a scaling up or down of the award, depending on an assessment made by the court as to whether or not the claimant will face greater or lesser risks than an average individual (Luntz 1990:286). Due to the varied nature that the contingency deductions can take under the separate heads of damages, contingency deductions will be discussed in greater detail under each of the heads of damages.

3.5 Hypothetical Damage Calculation:

Hypothetical example:

During the explanation that will follow, where required, use will be made of the following hypothetical example.

A 35 year old male, who previously earned R4,000 per month (R48,000 per annum), now, as a result of his/her injuries can only earn R1,200 per month (R14,400 per annum). Up until the date of damage determination the claimant had already spent R50,000 on medical expenses. In addition, due to his/her condition there is a 75% chance that he/she will require an additional operation in 10 years time. The current cost of the operation is R10,000. It has also been determined that he/she has completed his/her grade 12 qualification.

Lastly a period of 4 years has past between the date of the accident and the final damage calculations.

3.4.1 Future Loss of Earnings:

Due to the fact that future loss of earnings is a perspective loss (i.e. it is not definite), the general approach to evaluation will be a combination of both the sum-formula and the concrete concept methodology. As such, Corbett and Buchanan (in Visser and Potgieter 2003:409-412) set out a four step process to determine the future loss of earnings:

1. Calculate the present value of the future income which the claimant would have earned but for his/her injuries and consequent disability;
2. Calculate the present value of the future income of the claimant's estimated future income, if any having regard to his/her injuries and disability;
3. Subtract the figure obtained in 2 from that obtained in 1; and
4. Adjust this figure in light of all relevant factors and contingencies.

(Visser and Potgieter 2003:410).

Step 1:

The first step requires that the claimant's future potential earnings (had he/she not been injured) be calculated, this is the sum-formula component of the process as this is in fact a hypothetical stream of income. The figures for the future year's incomes would be determined from an earnings questionnaire completed by the claimant's last employer. In order to calculate the total future loss of earnings, an actuary will take into account the total earnings until normal retirement age and then reduce each year's earnings by an amount as determined by his/her risk for early death. In order to calculate the risk of early death between one age and another one needs to consult a life table that shows the number alive, from a sample population split into age segments, at the end of each age segment. From this the risk of early death before reaching a later age is calculated as:

$$\frac{(\text{Number alive in current age group} - \text{Number alive in targeted age group})}{\text{Number alive in current age group}}$$

This will then provide a future value for future loss of earnings, which will need to be capitalized, so as to provide a present value for future loss of earnings. What follows is the calculation of the present value of future loss of earnings as per the example set out above.

As the claimant would earn R48,000 per annum, Life table 5 (equal to 100% of the coloured mortality table) from The Quantum Yearbook 2004 (Koch 2004:97) should be applied. Table 3.1 provides a table showing the risk of early death for each year from age 35 until retirement at age 65, as well as the future loss of earnings that should be awarded for each year. The total for future loss of earnings is calculated by adding each individual year's awards together, resulting in the future value of R1,194,901.

As has been mentioned, what is required is the present value for future loss of earnings. When the future value is discounted (using each year's future loss of earnings reduced for risk of early death as the cash flows) at 2.5% per annum the present value is R856,407.

It can be seen from table 3.1 that the deductions for risk of early death reduce the future value of loss of earnings substantially. If no deductions for risk of early death were made then the future value would be R1,440,000, which when discounted at 2.5% becomes R1,004,654. Thus, the deductions for risk of early death result in a 14.75% reduction in future loss of income. This means that should the risk of early death not truly reflect the risks for the claimant, then the claimant is placed in a greatly disadvantaged position in the case of over estimated risk of early death (or at an advantage with over compensated if the risk is under estimated).

<u>Age</u>	<u>Number Alive *</u>	<u>Risk of Early Death</u>	<u>Future Income Awarded</u>
35	84480	0.006652462	47680.68
36	83918	0.013671875	47343.75
37	83325	0.02109375	46987.50
38	82698	0.028929924	46611.36
39	82036	0.037168561	46215.91
40	81340	0.045809659	45801.14
41	80610	0.054888731	45365.34
42	79843	0.064441288	44906.82
43	79036	0.074526515	44422.73
44	78184	0.085227273	43909.09
45	77280	0.096590909	43363.64
46	76320	0.108688447	42782.95
47	75298	0.121579072	42164.20
48	74209	0.135298295	41505.68
49	73050	0.149869792	40806.25
50	71819	0.165329072	40064.20
51	70513	0.181687973	39278.98
52	69131	0.198934659	38451.14
53	67674	0.217057292	37581.25
54	66143	0.23602036	36671.02
55	64541	0.255812027	35721.02
56	62869	0.27639678	34732.95
57	61130	0.297762784	33707.39
58	59325	0.319874527	32646.02
59	57457	0.342696496	31550.57
60	55529	0.366205019	30422.16

61	53543	0.390352746	29263.07
62	51503	0.41509233	28075.57
63	49413	0.440352746	26863.07
64	47279	0.466062973	25628.98
65	45107	0.492151989	24376.70
66	42903		
Future value for Future Loss of Earnings			R 1,194,901.14
Present value of Future Loss of Earnings			R 856,407.82

Table 3.1 Calculation of future and present value of future loss of earnings had injury not occurred.

Adapted from: Koch 2004:97

Step 2:

The second step in the estimation of loss of future earnings follows a concrete approach, in that the claimant's earning potential after the injury must be assessed. In the case of a person who has been completely disabled, it is possible for this figure to be zero, however, if he/she is able to earn income, this must be captured by the calculation. Additionally, even if a person is still capable of work but due to their inability to make use of public transport, they are unable to find work (Koch 2001, in Road Accident Fund 2002B:999), then their future potential for earnings due to the injury should be taken as zero.

Zero chance of earning after an injury is not always the case though, and when there is the possibility of future earnings, these should be taken into account. These are calculated in the same way that the potential earnings had the accident not occurred are calculated.

Table 3.2 shows the risk of early death for the individual discussed above (Koch 2004:97) as well as the future and present values of potential earnings after the injury to the claimant. Thus the present value is R256,922.

Step 3:

The penultimate step in the process is to deduct the figure obtained in step 2 from the figure obtained in step 1. Thus the amount to be considered would be:

$$R856,407 - R256,922 = R599,485$$

<u>Age</u>	<u>Number Alive</u>	<u>Risk of Early Death</u>	<u>Future Income Awarded</u>
35	84480	0.006652462	14304.20
36	83918	0.013671875	14203.13
37	83325	0.02109375	14096.25
38	82698	0.028929924	13983.41
39	82036	0.037168561	13864.77
40	81340	0.045809659	13740.34
41	80610	0.054888731	13609.60
42	79843	0.064441288	13472.05
43	79036	0.074526515	13326.82
44	78184	0.085227273	13172.73
45	77280	0.096590909	13009.09
46	76320	0.108688447	12834.89
47	75298	0.121579072	12649.26
48	74209	0.135298295	12451.70
49	73050	0.149869792	12241.88
50	71819	0.165329072	12019.26
51	70513	0.181687973	11783.69
52	69131	0.198934659	11535.34
53	67674	0.217057292	11274.38
54	66143	0.23602036	11001.31
55	64541	0.255812027	10716.31
56	62869	0.27639678	10419.89
57	61130	0.297762784	10112.22
58	59325	0.319874527	9793.81
59	57457	0.342696496	9465.17
60	55529	0.366205019	9126.65
61	53543	0.390352746	8778.92
62	51503	0.41509233	8422.67
63	49413	0.440352746	8058.92
64	47279	0.466062973	7688.69
65	45107	0.492151989	7313.01

66	42903		
Future value for Future Loss of Earnings		R 358470.34	
Present value of Future Loss of Earnings		R 256,922.35	

Table 3.2 Calculation of future and present value of future earnings after injury

Adapted from: Koch 2004:97

Step 4:

The final step in determining the future loss of earnings is to take into account the general contingencies that may have affected the potential of the claimant to earn the income as set out in step 1. The reasoning behind making a contingency deduction from future loss of earnings is summed up well in the following quote:

“It is never to be assumed that any one man will be so far blessed that he/she that he/she will go through life without illness and without any checks to his/her occupation; always having the work he/she desires to have; that he/she will always continue to earn the same rate of wages which at the most prosperous time of his/her life he/she will be getting; and that he/she will not be subject to those constant interferences which befall all of us.”

(*Ritchie v Victorian Railways Commissioner* (1899) 25 VLR 272 (FC) in Luntz 990:284).

This means deductions should be made to the figure obtained in step 3, so as to reflect the possibilities that that the claimants' future earnings, even without the injury, would not have been as good as the calculated in step 1. As such contingency deductions can be made for future unemployment, strikes, sickness and holidays (Street 1962:120-121). However, it is not required that a detailed breakdown for the contingencies be given. Luntz (1990:287) draws attention to the fact that most often deductions for strikes, sickness and holidays are very seldom made. This is directly attributed to the fact that these situations will be dealt with under a contract of employment, and would thus not have a negative impact upon the earnings of the claimant. However, if the claimant were self employed or employed in the informal sector, then there is a possibility that deductions may be made for these eventualities.

As far as deductions for unemployment are concerned, there are varying views as to what constitutes a fair deduction. Mather (2004:5) advocates for a deduction based upon the probability of a claimant obtaining employment. The figures used by Mather at the time were the unemployment figures provided by the Development Bank of South Africa. The figures put the unemployment rate in the Eastern Cape at 32% and in Gauteng at 28.5% (In the report Mather only considered these two rates as the claimant originally lived in the Eastern Cape but moved to Gauteng to seek employment) (Mather 2004:6). The figures used by Mather are similar to those provided by Statistics South Africa (2004:10), which puts the levels at 32.5% and 28.2% respectively. However, the rates, as applied by Mather could be extremely harsh. If they were directly applied to individuals who were employed at the time of the accident, their employment history would not be taken into account. Following from Mather's calculations it seems that he advocates a deduction of 28.2% of future earnings based upon the current unemployment rate for individuals living in Gauteng. This is not realistic as it does not take into account the fact that certain sectors suffer from higher rates of unemployment than others, as well as the fact that certain job categories are more secure than others (Luntz 1990:285). Unfortunately in South Africa sector specific statistics are not available. If it were possible to calculate sector specific rates for each geographical region, or rates based upon education completed, then the approach applied by Mather could prove very useful, but as these statistics are not available, the method will not be used. This decision is supported by Luntz (1990:288-289), who sets out that the impact of unemployment falls most heavily upon the young. This is also emphasized by statistics from Australia, where general unemployment levels in 1987 rose to 8.1%, however the rate for those aged 45 -54 never rose above 4.7 (Luntz 1990:289). Luntz also implies that application of historic rates to future employment probabilities is unfair as the rate constantly changes (1990:289). The application of historic unemployment rates could potentially be used for contingency deductions for past loss of earnings, as such the topic will be revisited in section 3.5.

An alternative method for contingency deductions is presented by Koch who states that an average of 0.5% should be deducted for each year of work included in the calculation (Koch 1993:146). In the above example the deduction would be in the region of 17.5%, although it could be further adjusted based on the claimants past

work record and would increase in the event of past stretches of unemployment or decrease if the claimant has a history of continued employment. Although the approach used by Koch has little basis other than the fact that it is applied by the courts, it will be taken as the method used.

With the above in mind the figure calculated in step 3 above should be adjusted as follows:

$$599,485 \times (1-0.175) = R494,575$$

The resultant total that should be awarded under loss of future earnings should be R494,575.

3.4.2 Future Medical Expenses:

As in the case of future loss of earnings, the amount to be awarded in terms of future medical damages is initially reduced to take account of the risk of early death. Then it needs to be discounted to a present value, as it is again assumed that the proceeds from the damages will be invested. Finally, the figure is further reduced due to contingencies., in the form of likelihood of occurrence (i.e. the probability that the expense will be incurred).

If the future medical expense that the claimant is expected to incur is only to arise in 10 years time (as set out in the hypothetical example), then the amount to initially be considered is required to be reduced for the risk of early death. Again, use is made of Life table 5 from The Quantum Yearbook 2004 (Koch 2004:97). From this it can be found that for a male aged 35 the risk of early death before age 45 (the age at which the operation is expected to occur) is 0.09659. Meaning that the amount to be considered for capitalisation should be the cost of the operation R10,000, less 9.66%. The final amount to be capitalized is reduced to R9,043.

The capitalisation method that should be followed is set out by Correia *et al* (1993:40) as follows:

$$PV = FV / (1 + r)^n$$

Equation 3.3

Where: PV is the present value of the expense to be incurred.
FV is the future value of the expense to be incurred.
r is the capitalisation rate to be applied.
n is the period over which the amount needs to be capitalized.

Using the same capitalisation rate as used in the calculation of loss of future earnings (2.5% per annum) and n as 10 years (the time until the operation is expected to occur), equation 3.3 becomes:

$$\begin{aligned}PV &= R9,043 / (1 + 0.025)^{10} \\PV &= R9,043 / (1.025)^{10} \\PV &= R9,043 / 1.28 \\PV &= R7,064\end{aligned}$$

Thus, the present value for the future cost of the operation is R7,064. An immediate criticism of the uninformed would be that the compensation is very unfair to the claimant, as it is based upon a figure which does not take into account future inflation. This is, however, the view of someone who does not truly understand the capitalisation rate as applied.

As covered in section 3.3.1 by using a capitalisation rate of 2.5%, it is assumed that there will be inflation of around 7% per annum (a high level of inflation considering that presently the rate is fluctuating at around 4% per annum), and thus the amount is only truly being reduced by the amount at which the return on an investment exceeds the inflation rate. Additionally if one considers the results shown by Mather (2004:2) in which historic capitalisation rates are provided on several 10 year investment opportunities, it can be seen that applying only a 2.5% capitalisation rate is very generous to the claimant. (Mather 2004:2 has shown that the 10 year historic annual capitalisation rate on a fixed deposit is 6% p.a. while that on a Government Bond is 9.3% p.a.).

The last factor that needs to be taken account of is the adjustment of the present value to take general contingencies into account. In terms of general contingencies related to future medical expenses, the most important deduction is related to the chance of the future medical expenses actually occurring. Koch (2002:70), sums up this

deduction under the heading 'Value of a chance'. It is indicated that if a future expense is expected to occur, but that there is only a 35% chance of the expense being incurred, then the court will only award 35% of the funds needed to cover the expense (Koch 2002:70). While this may seem to once again be to the detriment of the claimant at the same time it protects the defendant from paying out excess compensation. Luntz (1993:283-284) highlights the same concept, although in a slightly different way. Luntz asks one to consider the situation where three individuals are injured, they all claim for compensation for a future operation, of which the present value is R10,000. If only two of the three are to eventually undergo the operation, then the total compensation should be R20,000 (the cost of the two operations) divided amongst the three claimants. Due to the fact that only two would undergo the operation, there was a 66% chance of them incurring the expense, as such they are each awarded 66% of the cost. This protects the defendant, as if he/she had had to compensate all three individuals fully he/she would have paid out an additional R10,000, which would not have gone towards the intended expense.

Considering that there is only a 75% chance that the claimant in the example will undergo the operation, he should thus be awarded only 75% of the present value of the operation, which is R5,298 ($R7064 \times 0.75$).

3.4.3 Past Loss of Earnings:

The calculation of past loss of earnings is considerably simpler than the calculation for loss of future earnings. The reason for this is three fold:

1. As the date at which the earnings should have been earned has already past, there is no need to reduce them for the risk of early death.
2. Due to the fact that past loss of earnings is not a future value, there is no need to capitalize the figure.
3. Provided that the claimant has been able to obtain the co-operation of his/her previous employer in completing the Earnings Questionnaire the past losses can be estimated with a lot more certainty than future earnings, as the employer will be able to base his/her estimates of increases on actual past performances according to his/her other employees (If, however, the claimant

was self-employed or his/her employer did not complete the questionnaire correctly then calculation is greatly complicated).

When considering past loss of earnings the award is (as in the case of future loss of earnings) based upon the difference between what the claimant could have earned if the accident had not occurred and what he/she has earned after the accident, less the deduction for contingencies.

The calculation can be broken down into four steps:

1. Calculate the value of the past income that the claimant could have earned but for his/her injuries and consequent disability per year;
2. Calculate the value of the income that the claimant was able to earn after his/her injuries and disability per year;
3. Subtract the figure obtained in 2 from that obtained in 1 and
4. Adjust this figure in light of all relevant factors and contingencies, then add all years together.

(Visser and Potgieter 2003:406).

Step 1:

As set out in the hypothetical example, the claimant previously earned R48,000 p.a. The accident occurred five years ago, thus the amount that he/she could have earned but for his/her injuries would have been:

Past potential earnings (uninjured) = R48,000 p.a.

Step 2:

Since his/her injury and disability, the claimant has been able to earn R14,400 p.a. Thus, his/her earnings after his/her injury and disability are:

Past earnings (injured) = R14,400 p.a

Step 3:

$$\begin{aligned} & \text{Past potential earnings (uninjured)} - \text{Past earnings (injured)} \\ & = \text{R}33,600 \end{aligned}$$

Step 4:

As was mentioned in section 3.3, application of past unemployment rates as a proxy for future unemployment, and hence contingency deduction, is not considered fair practice. This is due to the fact that rates will change in future years, and also the general rate is unduly harsh on older generations and people who are more highly qualified, who normally have a much lower unemployment level than the national average (Luntz 1990:289). If a rate of unemployment for a past year could be calculated for a specific age group or qualification level, then that rate could fairly be used as a contingency deduction for that particular year.

The Labour Force Survey conducted by Statistics South Africa (2000A), provides estimates of the population who are economically active (Those in employment + those who are officially unemployed), as well as estimates for the number of people who are considered to be officially unemployed. Whilst the figures for the unemployed are broken down by age group and race, those for the economically active population are not (nor are the figures for those employed). This makes calculation of an age specific unemployment rate impossible using the presented figures.

A second best solution can be arrived at, if the total of employed and officially unemployed people is broken down by highest education completed. This makes it possible to obtain an estimate for the unemployment rate for a person based upon the highest qualification that they have obtained. This unemployment figure can then be used to make a contingency deduction from past lost earnings if the highest qualification obtained by the claimant is determinable. It is also possible to calculate the rate for years preceding 2000. However, the estimation process switched from using the October Household Survey before 2000 to using a dedicated Labour Force Survey in 2000 thus estimates may not be directly comparable (Statistics South Africa 2000A:6).

The labour force survey is performed twice per year thus the qualification specific unemployment rate can be calculated as follows:

$$\frac{\text{Unemployed}_{\text{Feb/Mar}} + \text{Unemployed}_{\text{Sept}}}{\text{Active Pop}_{\text{Feb/Mar}} + \text{Active Pop}_{\text{Sept}}}$$

Where: $\text{Unemployed}_{\text{Feb/Mar}}$ is the number of unemployed people who have completed that specific level of qualification, according to the February/March survey of that year.

$\text{Unemployed}_{\text{Sept}}$ is the number of unemployed people who have completed that specific level of qualification, according to the September survey of that year.

$\text{Active Pop}_{\text{Feb/Mar}}$ is the number of economically active people who have completed that specific level of qualification, according to the February/March survey of that year.

$\text{Active Pop}_{\text{Sept}}$ is the number of economically active people who have completed that specific level of qualification, according to the September survey of that year.

The intention of using a two estimate approach for both the unemployed and economically active populations for each group is to avoid cyclical unemployment, due to seasonality. This could have a significant impact on the employment of people with little or no education. The official definition used by Statistics South Africa of those considered to be unemployed “are those individuals who (a) did not work during the seven days prior to the interview, (b) wanted to work and are available to start work within a week of the interview, and (c) have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview” (Statistics South Africa 2002A:11).

The qualification divisions set out by the Labour Force Survey are: None; Grade 0 to Grade 3; Grade 4; Grade 5; Grade 6; Grade 7; Grade 8; Grade 9; Grade 10; Grade 11;

Grade 12; NTC I - NTC III; Dipl./cert. with Grade 11/ Std 9 or lower; Dipl./cert. with Grade 12/ Std 10; Degree and higher; Other and Unspecified (Statistics South Africa 2000B:53). This means that for the five years between the date of injury and the assessment of damages, the specific qualification unemployment rate that needs to be calculated is for males that have completed grade 12, for the years 2000 to 2004. Table 3.3 below sets out the required rates.

Year	Unemployed Feb/Mar	Unemployed Sept	Active Pop Feb/Mar	Active Pop Sept	Unemployment rate
2001	527	521	1184	1921	33%
2002	556	572	2017	2049	28%
2003	651	583	2159	2219	28%
2004	632	544	2383	2319	25%

Table 3.3: Unemployment rate for Males who have completed grade 12, 2001-2004.

Sources: Statistics South Africa 2001A, Statistics South Africa 2001B, Statistics South Africa 2002B, Statistics South Africa 2002C, Statistics South Africa 2003A, Statistics South Africa 2003B, Statistics South Africa 2004A, Statistics South Africa 2004B.

Thus the compensation to be paid for each year should be:

$$2001 = R33,600 \times (1 - 0.33)$$

$$= R22,512$$

$$2002 = R33,600 \times (1 - 0.28)$$

$$= R24,192$$

$$2003 = R33,600 \times (1 - 0.28)$$

$$= R24,192$$

$$2004 = R33,600 \times (1 - 0.25)$$

$$= R25,200$$

$$\text{Total Compensation} = R96,096$$

3.4.4 Past Medical Expenses:

Past medical expenses, like past loss of earnings, do not need to be discounted to a present value, due to the fact that they have already been incurred. Unlike past loss of earnings, they do not need to be reduced for contingencies. Thus, the calculation for compensation to be paid out for past medical expense can be seen as a simple addition of the past bills that have had to be covered by the claimant as a result of injuries suffered due to the defendant's actions.

From the example the claimant would be entitled to R50,000 in terms of compensation for his/her past medical expenses. However Koch does note that he has not seen a Road Accident Fund calculation, where they have not forgotten to include the impact of inflation on the claim, from the date of the accident until the date of the calculation, and further-more that this results in a massive understatement of the claim value (Koch 2004:65). This implies that past losses should be increased to take account of the inflation that has eroded the purchasing power of that money. This could result in courts increasing the amounts awarded by the level of inflation for each year that passed since the date of the accident. This would seem to be the fair approach, as it should be noted that the motivation behind discounting compensation for future expenses is to remove the increase purchasing power that the claimant would receive (due to returns being earned on lump sums that could be being invested). The corollary of this is that they should also be compensated for the income they loss from not being able to partake in profitable investments (as money paid out to cover past medical expenses could have rather been invested and thus earn a return). However, South African courts do not allow for loss of purchasing power to be taken into account when determining past expenses or losses, thus the amount to be included under past medical expenses would be R50,000.

3.5 Conclusion:

It has been shown above that the calculation of damages in the event of disability that prevents continued gainful employment, is not a simple process of adding up what he/she would have earned had the injury not occurred. Rather, the damages should be broken down into the separate heads of damages as set out in Chapter 1. Then

depending on the classification of the loss (between past or future losses) the damages are calculated.

In the case of past losses, the method is relatively straight-forward, as the losses do not need to be reduced to present values (they are also not increased to future values, as Koch promotes they should be) nor do deductions have to be made on the basis of chance of early death.

When considering future losses the approach is slightly more complicated. Initially the loss must be adjusted for the risk of early death. This takes into account that there is a chance that the claimant may die earlier than the income would have been earned, and in the case of future medical expenses that the claimant may die before the expense is incurred. This is accounted for by reducing each year's award by the risk of early death, as calculated from the appropriate life table.

Once the award has been reduced to account for early death it needs to be transformed into a present value. This is due to the fact that the future income/expenses are given as future values, and thus if received immediately can be invested at a return, giving the claimant an unfair advantage and placing an additional burden on the defendant. As such, awards are reduced using an annual compound capitalisation rate (roughly equal to the real rate of return that can be expected on low risk investments).

Lastly the award is reduced/increased to account for other contingencies that may arise such as the expense not being incurred or the possibility of unemployment. Once these further contingencies have been deducted/added, the final award is arrived at by addition of the separate heads of damages.

Chapter 4: South African Life Tables and the Current Population.

4.1 Introduction:

The tables that were applied in chapter 3 are known as the 84-86 South African Life Tables (SALT 84-86). These tables were calculated using results from the 1986 South African census. As such, they represent the mortality levels that were found in the South African population during the period 1984 to 1986. Although these tables are still applied to damage calculations for South Africans, questions can be asked as to whether or not they still represent the countries population, or if alternative tables should be used or altogether new tables be developed.

There are two concerns that arise when using the SALT 84-86 tables. The first relates to the degree to which these tables actually represent the South African population. The second concern is based upon the level of mortality that is encapsulated in the tables.

What shall follow in this chapter is initially a brief explanation of what mortality tables represent. Thereafter, an investigation into the degree to which the 84-86 SALT tables represent the current South African population. The chapter concludes by investigating whether the mortality rates captured in the 84-86 SALT tables are any different to the mortality currently being experienced by the South African population.

4.2 Life Tables Explained:

Life tables can be classified into three main categories:

- Cohort Life Tables;
- Clinical Life Tables; and
- Actuarial/Current Life Tables.

Cohort Life Tables show the actual mortality experiences for a group of people born at the same time. The mortality shown in the tables is an observed rate, and is specific

to that group of people (Jimenez-Huerta, 2004:3). This means that tables can not accurately imply mortality for another age cohort.

Clinical Life Tables are similar to Cohort Life Tables in that they show the actual mortality experience of a group of individuals. Unlike the Cohort Tables the group of people are not born in the same period, but rather have all experienced some activity which impacted on their expected life span. An example of such an experience would be undergoing a medical procedure. The table shows how long the patients of the procedure survived after the completion of their treatment. As in the case of the Cohort Table, the mortality in the table is specific only to those people who underwent the procedure (Jimenez-Huerta, 2004:3).

The last category of life table is an Actuarial Life Table. An Actuarial Life Table does not consider a real population, but rather a sample one, which is influenced by the same mortality effects (Jimenez-Huerta, 2004:3). This means the table does not incorporate real mortality levels, but rather an approximate rate which is then applied to the real population the table represents. They are also known as Current Life Tables as they incorporate the mortality rates that are observed in the current population (Jimenez-Huerta, 2004:3).

The SALT 84-86 table's fall into this latter grouping, and a question that should be posed is how accurately the tables reflect the mortality levels experienced by South Africans in 2006, 20 years after their calculation.

From the definition of an Actuarial Life Table, two criteria can be deduced that must be met by an Actuarial Life table. Firstly, even though the table does not reflect the absolute population it is being used for, there should still be some relationship between the groups used to establish the table, and those it is to be applied to.

Secondly, it is important to note that even though the table is not directly tied to a specific population at a point in time, it is linked to mortality effects that the population faces. Over time mortality effects can change and the greater the difference between the mortality effects captured in the table and those faced by the actual population the less accurate the table will become. When a table is constructed,

the mortality levels for those in their 60's can vary greatly to the levels found in the same age group 20 years later. This means that as time passes actuarial tables become a more general approximation for the population they were constructed to represent (Jimenez-Huerta, 2004:3).

4.3 SALT 84-86 and the South African Population:

Despite the fact that an actuarial life table is an approximation of the mortality being experienced by the population, it is still important that it be made up from a representative sample of the population that is to mirror. If this is not the case then the captured mortality experience in the table will be biased, representing only the mortality of those groups included in the table.

When the SALT 84-86 tables were calculated, only three racial groups were included: Asiatic Coloured and White (Koch 2004:87). A reason for this was that during the apartheid era demographic data for Asiatic's, Coloured's and Whites were relatively complete, this was not the case for the Black population. Due to this incompleteness, the group was excluded (Department of Health 1998:3). This means that the tables which are still in use today, are based upon only a minority of the true South African population.

From the 2001 South African Census it can be seen that the Black population makes up 79% of the total population in South Africa (Statistics South Africa 2003A:10). The tables are thus not directly connected to the majority of the population.

The reason why the inclusion of all groups is a requirement for accuracy is due to the disparity found between the different population groups. If all racial groups in the country lived in similar conditions it would be plausible to assume that they faced similar mortality effects. Although the political outlook of the country may have changed making everyone politically equal, the reality is that a large portion of the population still lives in far inferior conditions to the rest. This results in the possibility of there being higher mortality levels in some racial groups than others. When considering settlement calculations, the mortality differences between groups means there is the potential for lower reductions for the chance of early death being

made when calculating compensation, than should actually occur. If, however, it is thought that all racial groups face the same mortality effects, no matter what their circumstances, then basing the national mortality tables on a sample made up of only 21% of the population could be justifiable.

Van de Walle *et al* (1992) identified two determinants/contributors to mortality for Sub-Saharan Africa. These were:

- Parents Education (Tabutin and Alcoto, in van de Walle *et al* 1992:33)
- Type of Housing (Mbacke and van de Walle, in van de Walle *et al* 1992:131).

[Confirmed by Roussouw and Jordaan (1997:28) and the Department of Health (1998:101)].

When looking at the South African population these two factors can be seen to vary widely amongst both population groups and provinces.

4.3.1 Parents Education:

When studying socio-economic indicators and differentials for mortality patterns in Sub-Saharan Africa, Tabutin and Akoto (in Van de Walle *et al* 1992:33) looked at what impact levels of education had on mortality. In their study they looked at both the mothers and fathers education in isolation, as well as their combined impact on mortality.

It was found that in all the countries studied there was a substantial mortality differential between the children of illiterate mothers (below 7 years of education) and those of literate mothers (more than 7 years of education). When considering the education of fathers this differential was less pronounced. In addition when considering the combined education levels of mothers and fathers, it was found that the mothers' education had a far greater impact on the levels of child mortality (Tabutin and Akoto in Van de Walle 1992:33-38). Child mortality is defined as the number of death among children under five years of age per 1000 (Ziehl 2002:79).

Although South Africa was not one of the countries included in the above mentioned study, similar trends can be seen between mothers' education and mortality.

<u>Mothers Education Completed.</u>	<u>Childhood Mortality.</u>
No education (0 years)	26.5
Some Primary (< 6 years)	26.4
Complete Primary(7 years)	14.5
Some Secondary (8 - 11 years)	13.8
Std 10 (12 years)	3.2
Higher (< 12 years)	0

Table 4.1: Childhood mortality and mothers education completed.

Adapted from: Department of Health, 1998:102

Table 4.1 shows the levels of childhood mortality, broken down by the level of mother's education. From this it can be seen that children born to mothers with less than four years education face far greater levels of childhood mortality than those with more educated mothers. In addition, there is a substantial decrease in the childhood mortality levels for those born to mothers who have completed at least 12 years or more of education. This is taken as confirming the expected relationship between higher education and lower infant mortality. However, it gives little indication though as to whether the exclusion of the Black section of the population could skew the actuarial tables currently in use.

To investigate this it is necessary to look at the education levels of females, broken down by population group. Table 4.2 shows the highest level of education completed by females of 20 years and older (Statistics South Africa 2004C:37).

When one considers the education level at which there is a substantial decrease in childhood mortality (12 years of education) it can be seen that 78.85% of Black females fall below this level, making it the highest of any group. Although it is only slightly worse than the Coloured education levels where 77.6% of females fall below 12 years of completed education, but greatly higher than the levels for both Indians/Asian (55%) and Whites (31.2%). This indicates the possibility that the Black

population could face a higher childhood mortality rate than any other group in South Africa. This is not however captured in the SALT 84-86 tables.

<u>Education Level</u>	<u>Black</u>	<u>Coloured</u>	<u>Indian/Asian</u>	<u>White</u>	<u>Total</u>
No Education	24.8%	8.3%	7.5%	1.5%	20%
Some primary	17.6%	18.7%	10%	1.4%	15.6%
Complete Primary	6.8%	10.6%	5.1%	0.8%	6.4%
Some Secondary	29.6%	40%	32.4%	27.5%	30.4%
Std 10	15.8%	17.7%	31.7%	41.4%	19.5%
Higher	5.4%	4.7%	13.3%	27.4%	8.2%

Table 4.2 Levels of education completed by females above age 20.

Adapted from: Statistics South Africa 2004C:37.

Figure 4.1 tracks the child mortality between population groups compared to the percentage of mothers who have completed less than 12 years of education. It can be seen that where a large percentage of mothers have not completed 12 years of education, there is a corresponding high level of infant mortality.

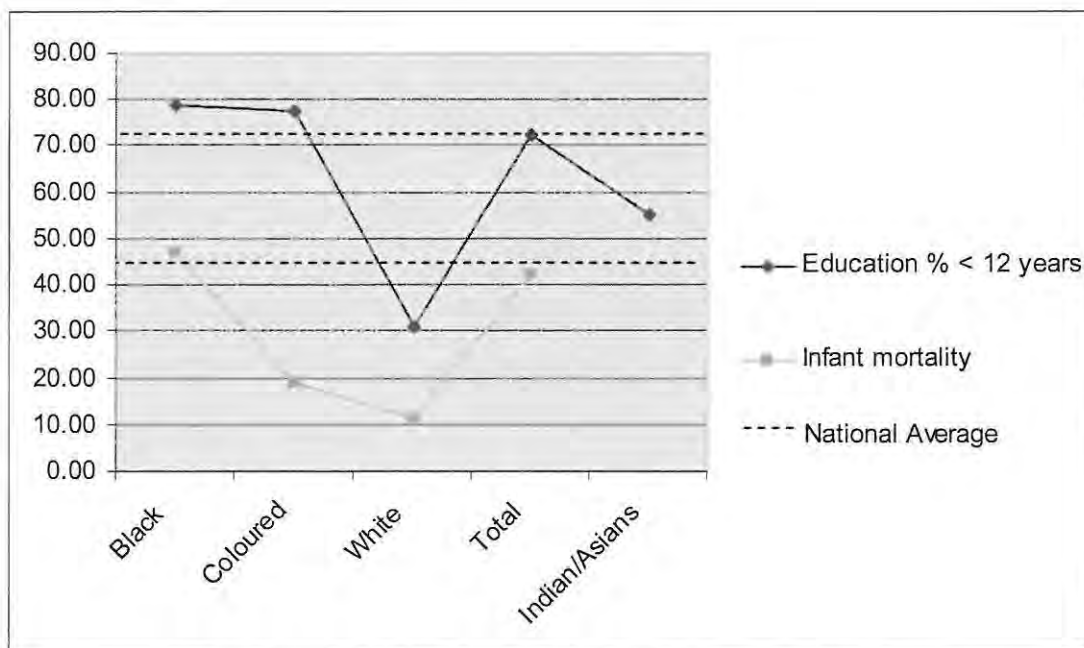


Figure 4.1 Mothers education less than 12 years versus Child mortality.

Adapted from: Department of Health 1998:102 and Statistics South Africa 2004C:37

Table 4.3 shows the levels of childhood mortality broken down by race group. When compared to the levels of education of females in each grouping it can be seen that the link between education and childhood mortality is evident.

A comparison between completed education and mortality between provinces show similar trends, whereby provinces with low education show increased levels of child mortality (Figure 4.2).

<u>Education Level</u>	<u>Kwa-Zulu Natal</u>	<u>Eastern Cape</u>	<u>Gauteng</u>	<u>Limpopo</u>	<u>Mpumalanga</u>	<u>North West</u>	<u>Western Cape</u>
No Education	24.6%	24.7%	8.7%	38.1%	30.4%	20.5%	5.5%
Some primary	17.2%	18.3%	10.6%	12.9%	15.2%	19.4%	14.4%
Complete Primary	5.7%	7.5%	5.5%	5.1%	5.7%	6.8%	8.2%
Some Secondary	27.4%	29.6%	35%	24.5%	25.7%	28.9%	37.3%
Std 10	18.5%	13.5%	27.6%	13.1%	17.3%	18.2%	23.6%
Higher	6.6%	6.4%	12.6%	6.3%	5.7%	6.2%	10.9%
% <12 years	74.9%	80.1%	59.8%	80.6%	77%	75.6%	65.4%

Table 4.3 Provincial break down of education completed by females above age 20

Adapted from: Statistics South Africa 2005A, 2005B, 2005C, 2005D, 2005D, 2005E, 2005F and 2005G:35.

Table 4.3 omits the Orange Free State and Northern Cape as the data has not been published.



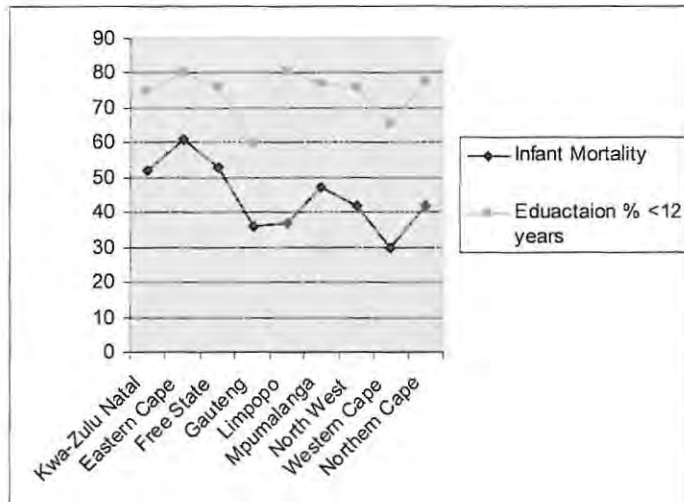


Figure 4.2 Female education less than 12 years versus provincial child mortality.

Adapted from: Statistics South Africa 2005A, 2005B, 2005C, 2005D, 2005D, 2005E, 2005F and 2005G:35.

4.3.2 Type of Housing:

The impact of mother's education levels on mortality, as found by Tabutin and Alcoto (in van de Walle *et al* 1992:33) is confirmed by Mbacke and van de Walle (van de Walle *et al* 1992:130). In addition the type of housing has also been found to play a role in child mortality levels.

In a study of Sub-Saharan African countries, housing was broken down into three groupings: traditional, semi-modern and modern. It was found that child mortality was significantly higher when comparing traditional housing versus semi-modern and modern housing (Mbacke and van de Walle, in van de Walle *et al* 1992:133).

In South Africa similar findings were obtained from the 1998 Fertility and Mortality Survey (Department of Health 1998:105). In the study it was seen that child mortality in houses built of bare blocks/plastered blocks were 45.3/43.9 as compared to other wall structures such as Mud 85.9 and Plastic 65.8.

<u>Wall type</u>	<u>Child Mortality</u>
Mud	85.9
Plastic/Iron	65.8
Bare Block	45.3
Plastered	43.9
Other	58.6

Table 4.4 Wall type and child mortality.

Source: Department of Health 1998:105.

When combining block houses with the use of electricity the child mortality level was seen to be a third if compared to other housing set-ups (Department of Health 1998:105).

From the South African Census 2001, the housing groupings do not align themselves easily to either of the above classifications. However, they could be grouped under House/Flat, Informal and Traditional, whereby it is assumed that the house/flat grouping would be constructed out of blocks. Following this classification it can be seen that the proportion of people classified as 'Black' living in either informal or traditional housing is far higher than for any other racial classification.

	<u>Black</u>	<u>Coloured</u>	<u>Indian/Asian</u>	<u>White</u>	<u>Total</u>
House/Flat	60.7%	89.4%	97.3%	98.0%	68.4%
Informal	20.6%	7.8%	1.3%	0.9%	16.8%
Traditional	18.7%	2.8%	1.4%	1.1%	14.8%
	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.5 Housing type by racial classification.

Source: Statistic South Africa 2004C:81

When the percentage of those living in informal/traditional housing is plotted against infant mortality, it can clearly be seen that there is a relationship between the two.

(See figure 4.3).

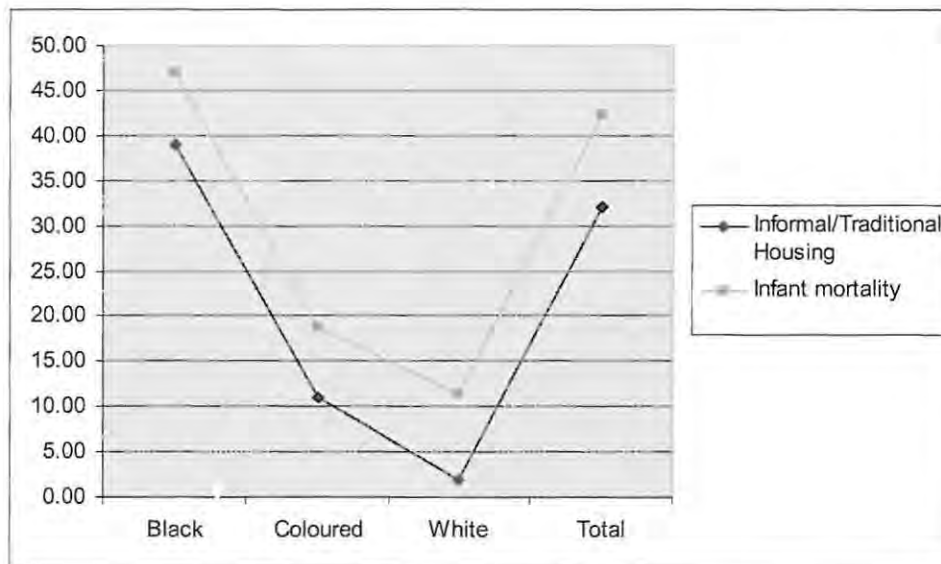


Figure 4.3 Informal/traditional housing versus infant mortality.

Adapted from: Statistic South Africa 2004C:81

It has been shown how education and housing circumstances differ between the racial groups of the South African population. These socio-economic indicators have been found in Africa to result in differing mortality levels and from the above the same appears to hold true for South Africa.

When looking at education levels, it was found that the racial groupings and provinces with the lowest levels of mother's education had increased child mortality rates. The same was found when considering type of housing amongst racial groups, where child mortality levels varied by housing type, and that there is great disparity between housing amongst the different populations groups. Similar findings (of increased mortality amongst the Black racial group) was found by Dorrington and Rosenberg (2001:6), where it was found that inclusion of the Black assured lives measurements created a vast change on an aggregated mortality measure, than if only Whites, Indians and Coloured's were taken into account.

Thus, far the analysis has only focused on the links between two socio-economic indicators and child mortality, which is seen as an "influential factor on the overall life expectancy estimates" (Bradshaw *et al* 2004:11). From this it has been shown that child mortality levels in the Black population are higher than for the other three racial groups. The fact that the countries largest racial group is not reflected in the

SALT 84-86 tables means that they do not conform to the first criteria for accurate Actuarial Life Tables; in that the population used for the table calculation does not reflect the actual population it is supposed to mirror.

4.4 Development of Mortality Effects in South Africa:

Mortality levels found in a society are not static and are influenced by a large number of factors, such as income levels, housing and sanitary conditions, access to and advancement of medical facilities and techniques as well as the nutritional levels of the population (Ziehl 2002:26). This means that as a population's living conditions change, so will the population's mortality levels.

This change in mortality patterns was first put forward by Thompson (in Ziehl 2002:23), when he/she described the demographic histories of a number of countries. It was later developed into the demographic transition model, which describes three stages through which populations pass overtime. Initially, a population will have both high levels of birth and death rates. This is replaced by a transition period where mortality levels drop, but birth rates remain high, causing high growth levels in the population. The third and final stage, as set out by the traditional model, is when birth rates drop in line with death rates, moving the population level into an almost equilibrium state, where it is neither rapidly increasing or decreasing. (Ziehl 2002:24-27). An important point to note is that there is no definitive time line associated with the progression of a population from one stage of the transition model to the next. There is also nothing that would prevent a country regressing to a previous stage if conditions in the country altered.

Bradshaw *et al* (2004:1) point to this transition among societies and highlight the difference between a developed, developing and un-developed societies disease profile. Generally, an un-developed society would face high levels of child mortality (noted by Ziehl to be the reason for the high birth rates to ensure at least two children survive (2002:28)), high levels of infectious disease causing death and malnutrition this would be manifested by the leading causes of death being tuberculosis, diarrhoea and malaria (Bradshaw *et al* 2004:89). As development occurs, the profile changes to one where degenerative and chronic diseases account for a larger number of deaths

(Bradshaw *et al* 2004:1), such as heart conditions and cancers (Bradshaw *et al* 2004:65).

When a society is still under-going development, different parts of the population will be living under both developed and un-developed conditions. This gives raise to the situation where the society as a whole will face both disease profiles, and suffer a double burden of disease, as is the case of South Africa (Bradshaw *et al* 2004:1). On top of the double burden there are also a large number of deaths due to unnatural causes (homicide, suicide and motor accidents etc). It is estimated that South Africa has the second highest rate of homicide after Columbia (Statistics South Africa 2006:XVI). In 1997 it was more likely that a male between the age of 15 and 25 would die from an unnatural cause than from a natural one (Statistics South Africa 2006:34). This high instance of death due to unnatural causes prompted Bradshaw *et al* to state that South Africa was facing a triple burden, as these unnatural deaths were causing such a large portion of deaths (Bradshaw *et al* 2004:1).

In addition to the mortality being caused by unnatural death, South Africa is plagued by a fourth factor contributing to high levels of mortality, HIV/AIDS. It was estimated in 2000 that South Africa had the 6th highest AIDS incidence rate in the world (having a lower rate than only other Sub-Saharan countries) (UNAIDS 2000, in Ziehl 2002:65).

The estimation of HIV/AIDS infections in a population and the resultant deaths are not a clean cut issues. In South Africa the most accepted measure of infections comes from the “sero-pervelance rate of pregnant woman attending public ante-natal clinics” (Schnieder and Kelly 2001:4). The infection level is determined by the ratio of women who test as HIV positive versus the total number of women who attend the clinics. The data is not however a perfect measure as it is directly affected by several different forms of adverse selection, as identified by Schnieder and Kelly (2001:4-5).

These are:

Gender Bias: The measure only tests females who attend ante-natal clinics, and thus ignores the male population. This means that there is the possibility of overestimating

the national infection levels as females are more biologically exposed to infection than males.

Income Bias: The majority of clinics from which the data is collected are public clinics. This means that if higher income groups, who do not use public clinics, face different infection levels this will not be reflected in the statistics.

Age Bias: Due to the fact that most pregnant women fall into a certain age category (and due to the fact that they are attending an ante-natal clinic are engaging on unprotected intercourse) this means the measure is being taken from a high risk group.

In addition one bias not mentioned by Schnieder and Kelly is the fact that the HIV test has to be consented to by the individual, and thus not all those who attend the clinic are tested, meaning that there is a possibility of over reporting, as only those who feel they are at risk may consent to the test and hence lead to more positive results being obtained.

Similarly deaths resulting from HIV/AIDS are not always classified with HIV/AIDS as the cause. An example of such is the case where an HIV positive person dies from tuberculosis, the cause of death could be attributed to either tuberculosis or AIDS, depending on how the notification of death certificate is filled out. In addition before 1998, only one space for cause of death could be entered and this would be filled in with the immediate cause, although death could have been brought on an underlying condition (Statistics South Africa 2006:70).

Although exact levels of infection in South Africa can not be determined, and many deaths as a result of HIV/AIDS are miss classified it is unmistakable that the virus contributes significantly to mortality levels for those between the ages of 20 and 44 years of age. It is for this reason that Bradshaw *et al* (2004:2) state that South Africa is no longer facing a triple burden, but now rather a quadruple burden of disease.

It needs to be asked what these four burdens carried by the current South African population mean in terms of the mortality conditions being faced now as opposed to those contained in the Salt 84-86 life tables.

In their efforts to determine the mortality levels in South Africa based on the 2001 census, Dorrington, Moultrie and Timaeus (2004) conducted an analysis on all sources of national mortality estimates. While some were seen to over estimate the mortality levels (Statistics South Africa 1996 Abridged tables for males) (Dorrington *et al* 2004:65) others under estimated the mortality levels (Statistics South Africa 1985-1995, 2000) (Dorrington *et al* 2004:66). Despite inconsistencies between estimates a general trend was noticed both at a national level as well as amongst population groups. Nationally mortality rates declined from 1945 until 1985. Then from 1985 to the mid 90's all estimates showed slow increases in mortality levels for both males and females. After 1995 the increases in mortality levels became more pronounced. These findings are illustrated in figure 4.4, which plots the various national mortality estimates that have been made for South Africa over time. While none of the estimates are exactly the same, they do all represent a similar trend of increasing mortality since 1985 which increased from 1995. This aptly illustrates the fact that no two authorities agree on the true level of South African mortality they do all agree to the presence of increased mortality since the official SALT tables were calculated.

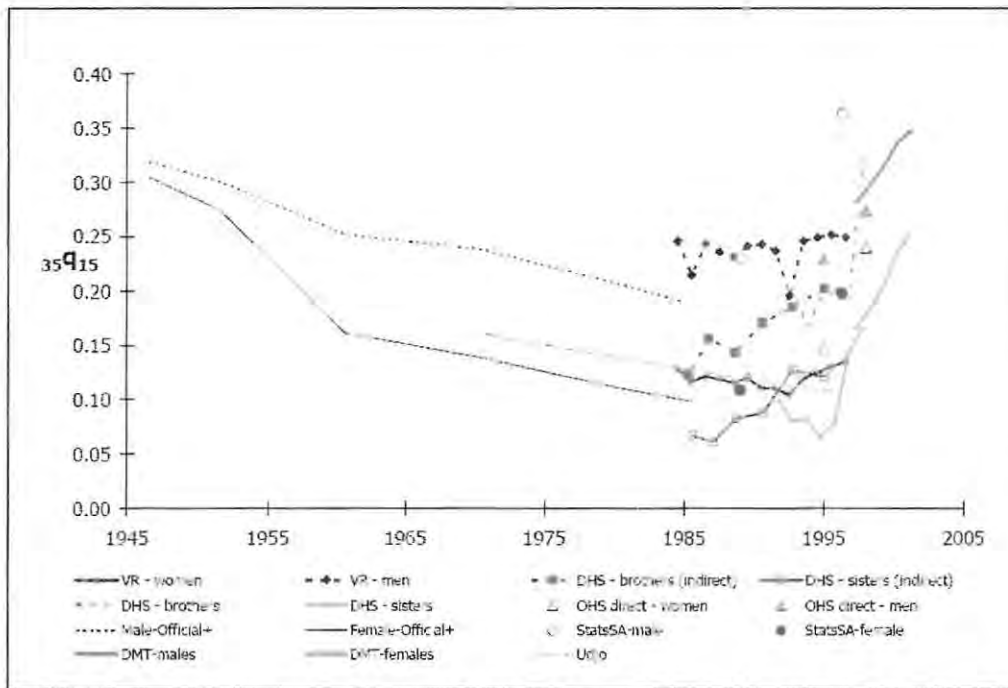


Figure 4.4 Trends in probability of dying between ages 15 and 50, South Africa

Source: Dorrington *et al* 2004:66

The increase in mortality between the ages of 15 and 50, as shown in figure 4.3, are mirrored when looking at the number of estimated survivors from an initial sample of 100,000 males and females (shown separately) alive on their 15th birthday at subsequent birthdays, as taken from the calculated survival ratios for 1997, 2000 and 2004 registered deaths in South Africa (Statistics south Africa 2006:178). What is most noticeable is that for both males and females there has been a drop in each measurement period. This indicates that in each age group fewer people were predicted to survive until the next age group, confirming the above-mentioned increased mortality levels at all age groups from 15 to 65 years of age.

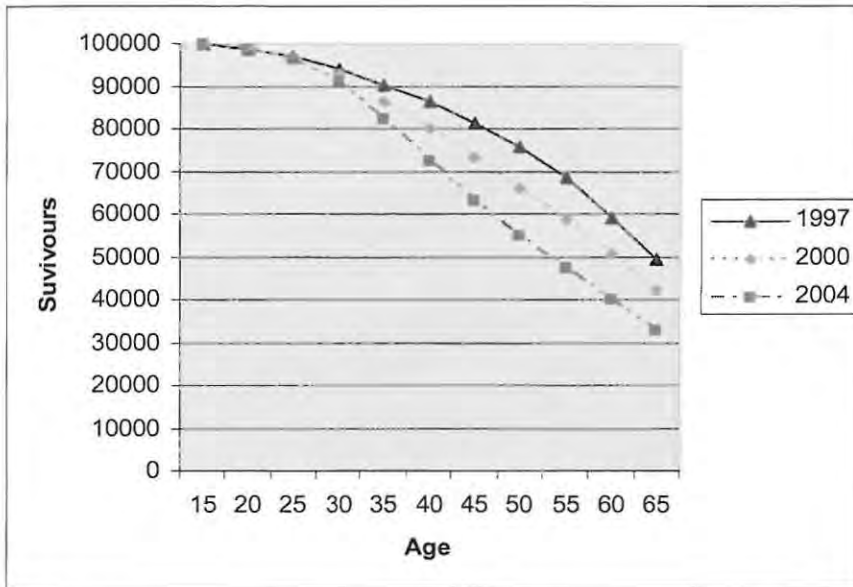


Figure 4.5 Proportion of males alive from initial population of 100,000 on subsequent birthdays, 1997, 2000 and 2004.

Adapted from: Statistics South Africa 2006:177

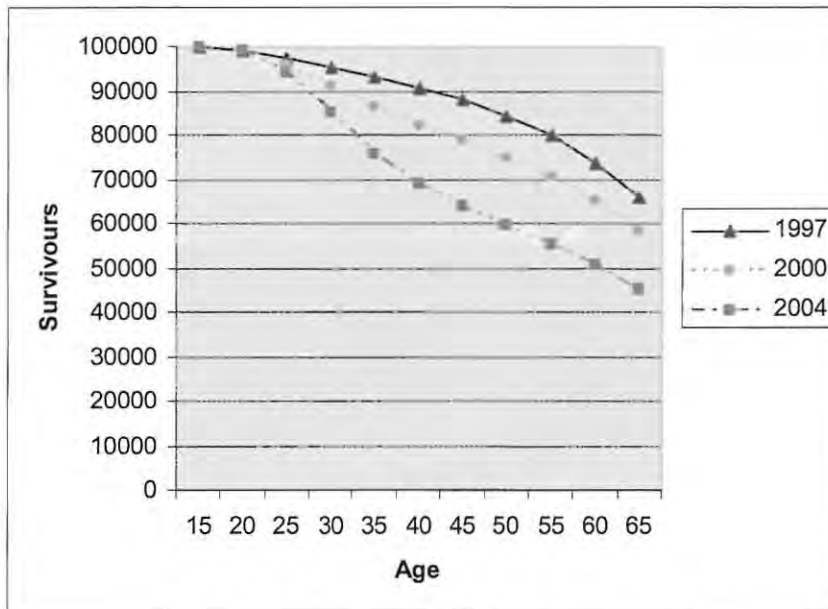


Figure 4.6 Proportion of females alive from initial population of 100,000 on subsequent birthdays, 1997, 2000 and 2004.

Adapted from: Statistics South Africa 2006:177

4.4 Conclusion:

In order for actuarial life tables to provide an accurate estimate of underlying mortality levels, the tables should be made up from a representative sample of the population. If all racial groups lived under similar conditions, then obtaining a representative sample would be relatively easy. In the case of the SALT 84-86 life tables only the mortality levels of Asiatic's, Coloured's and White's were included.

If all racial groups in the country faced similar mortality conditions, basing the national mortality tables on only three racial groups would not pose a problem. Due to the Black racial group forming the majority of the total population, and the group has been shown to face increased mortality levels, it leads to the conclusion that the SALT 84-86 tables are not an accurate reflection of the true South African population.

It has been shown that the mortality levels in the South African population have increased since the SALT 84-86 tables were calculated, especially post 1995. This leads to the conclusion that when using the SALT 84-86 tables to make reductions to damages for the risk of early death, the reductions being made underestimate the true risk. This would lead to defendants paying out more in damages than should really occur, due to the fact that the claimant will most likely die at an earlier age. While the over compensation could be adjusted via increase contingency deductions, this brings into question the validity of the entire calculation, if it is to be summarily reduced after the fact to account for its inaccuracies.

Chapter 5: Effect of alternative life tables on damage calculations.

5.1 Introduction:

It has been proposed in the previous chapter that the SALT 84-86 life tables are not truly reflective of the South African populations' mortality, both due to the tables not including a representation of 76% of the 2001 South African population and also due to the perceived changes in mortality patterns for the South African population. The tables are still used when calculating damages for loss of future earnings and future medical expenses. There are life tables that have been developed since the SALT 84-86 tables that could be used as an alternative life tables when calculating future loss of earnings in the damage calculations.

Four alternative life table sets are presented in the following chapter. Each table found in the set has been used to calculate future loss of earnings as per the example used in chapter 3 to arrive at the future value for future loss of earnings.

Unlike the SALT 84-86 life tables, the alternative tables have been published in abridged format, whereby they present mortality effects in 5 year groupings. This difference in presentation means that a direct comparison between the SALT 84-86 calculation and the alternatives would not be accurate. In order to address this difference the original damage calculation as presented in chapter 3 has been revised so as to allow for a meaningful comparison.

5.2 Hypothetical Damage Calculation Revisited:

In chapter 3 a hypothetical damage calculation was done for a 35 year old male, who previously earned R4,000 per month (R48,000 per annum). In the original example deductions were made to future income on a yearly basis for the risk of early death. All of the alternative tables that are to be presented have been presented in abridged format, where-by they show survival ratios in 5 year groupings. For this reason the original estimate has been revised on the basis of calculating the risk of early death on a 5 yearly basis. This factor is then used to reduce the 5 year periods future income.

The result of this grouping on the future value of future loss of earnings is shown in Table 5.1. It can be seen that the effect of the grouping is that the total future value increased from R1,194,901 to R1,299,263, an increase of 8.7%. Although this proves a substantial increase, the calculation is only being used for illustrative purposes and if the alternative sets of life tables showed vastly different award amounts, they would be required to be presented in un-abridged form to be truly acceptable for damage claims. The modified approach will enable a true comparison to be made.

<u>Age</u>	<u>Number Alive</u>	<u>Risk of Early Death</u>	<u>Future Income Unadjusted</u>	<u>Future Income Awarded</u>
35	84,480	4%	240,000	231,080
40	81,340	5%	240,000	228,021
45	77,280	7%	240,000	223,040
50	71,819	10%	240,000	215,679
55	64,541	14%	240,000	206,488
60	55,529	19%	240,000	194,955
65	45,107			
Future value for Future Loss of Earnings				1,299,263

Table 5.1 Adjusted future value of future loss of earnings.

Calculated from: Koch 2004:97

5.3 Abridged Life Tables 1985-1994:

The Abridged Life tables 1985-1994 were calculated by Statistics South Africa in 2000, the reason for the calculation of the tables was that it was seen by Statistics South Africa that the SALT 84-86 tables were not truly reflective of the South African population, nor of its mortality levels (Statistics South African 2000:V). This was due to both incompleteness of death registration data for Coloureds, Indians and Whites. It was also highlighted that the exclusion of the Black population from the tables resulted in incomplete representation (Statistics South Africa 2000:V), as set out in chapter 4.

The Abridged 85-94 tables were calculated from the Census 1996 data on survivorship of kin and were presented as both a national table and a table for each population sub-group for both males and females.

Figure 5.1 shows the calculated future value for future loss of earnings from each life table as well as the value calculated using the SALT 84-86 table. From this it can be seen that the valuation between using the SALT 84-86 table versus the 85-95 South African Male table resulted in an increase in the damage value from R1,299,263 to R1,306,346, an increase of 1%. When taken at surface value, this would seem to indicate that the 85-94 tables encapsulate a lower mortality level than the 84-86 tables, a situation not out of the ordinary considering that both represent a pre-AIDs scenario, and that the 84-86 tables were thought to have over estimated mortality (Statistics South Africa 2000:V). It must be noted that the table used from SALT 84-86 tables represented only the Coloured mortality. Based upon this information it can be seen again that the SALT 84-86 table used, contained a lower mortality level than that of the Coloured 85-94 table.

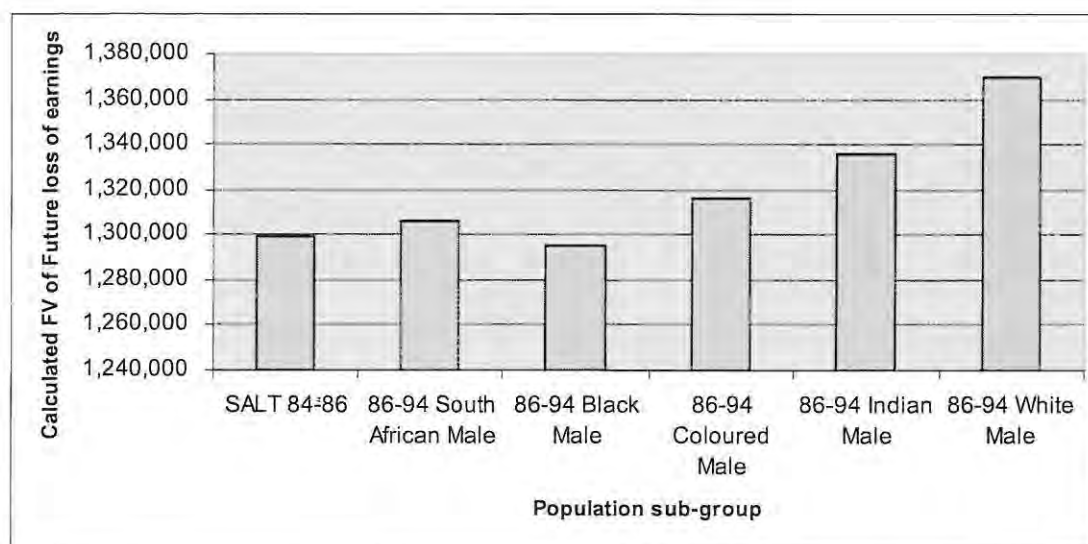


Figure 5.1 Future value of future loss of earnings as per SALT 84-86 and Abridged 85-94 life tables.

Calculated from: Koch 2004:97 and Statistics South Africa 2000:1-5

The fact that the Abridged 85-94 life tables contain a national mortality level that is lower than the SALT 84-86 tables does little to address the problem of increased mortality in the South African population. This is due to the fact that (as covered by Dorrington *et al* 2004:66) the rapid increase in mortality was only seen from 1995 onwards (although it could be possible that the increase in mortality noted in figure

4.4 since 1985 could have been linked to the emergence of HIV/AIDs impact on South Africa although it was not highlighted due to a lack of awareness). In addition the tables still represent a pre-AIDs mortality experience, and so ignoring South Africa's fourth burden of disease as set out by Bradshaw *et al* (2001:1).

5.4 Abridged Life Tables 1996:

The Abridged Life Tables 1996, were calculated and published by Statistics South Africa at the same time as the Abridged Life Tables 1985-1994. They were, however, based on registered deaths (Statistics South Africa 2000:V). While the SALT 84-86 tables and the Abridged 85-94 tables were calculated prior to the onset of HIV/AIDs that has laid siege to the South African population, the Abridged 96 tables were calculated based on data from when AIDs was emerging as a health problem in the country (Bradshaw *et al* 2004B:13). With this in mind it logical to assume that the tables would contain increased mortality levels.

Unlike the SALT 84-86 and Abridged 85-94 tables, they were not calculated along racial lines. This is due to the fact that after the Population Registration Act of 1991 was repealed in 1994, where by a persons racial group is not required to be recorded with registered deaths (Statistics South Africa 2000:V). As an alternative breakdown, the life tables were presented on a provincial basis as well as for the nation overall.

The change in sub-national break down from racial grouping to geographical groupings should be seen in a positive light. If tables were to be used solely on the basis of racial classification, it could lead to claims of discrimination, in that two individuals who live in the same area, earn similar incomes, and who for all intensive purposes faced similar life circumstances, would receive vastly different damages (consider the amounts awarded based on the Abridged 85-94 tables for Blacks and Whites, the difference being 6%). Additionally, the of division of national population tables into geographic sub-populations was highlighted by Dorrington and Rosenberg (2001:11), as a classification method which showed potential, considering that population statistics are no longer being gathered with 'population classification'.

Figure 5.2 shows the calculated future value for future loss of earnings. From this it can be seen that if using the national male table, that the damages value has decreased, by 5%. What is interesting to note, is the fact that for no province, did the award value increase. This indicates that across all provinces the mortality of the population was seen to increase. It was seen to increase the least in the two most developed provinces (Gauteng -0.76% and the Western Cape -1.55%) whilst the less developed provinces showed decreases ranging from 4 to 8%.

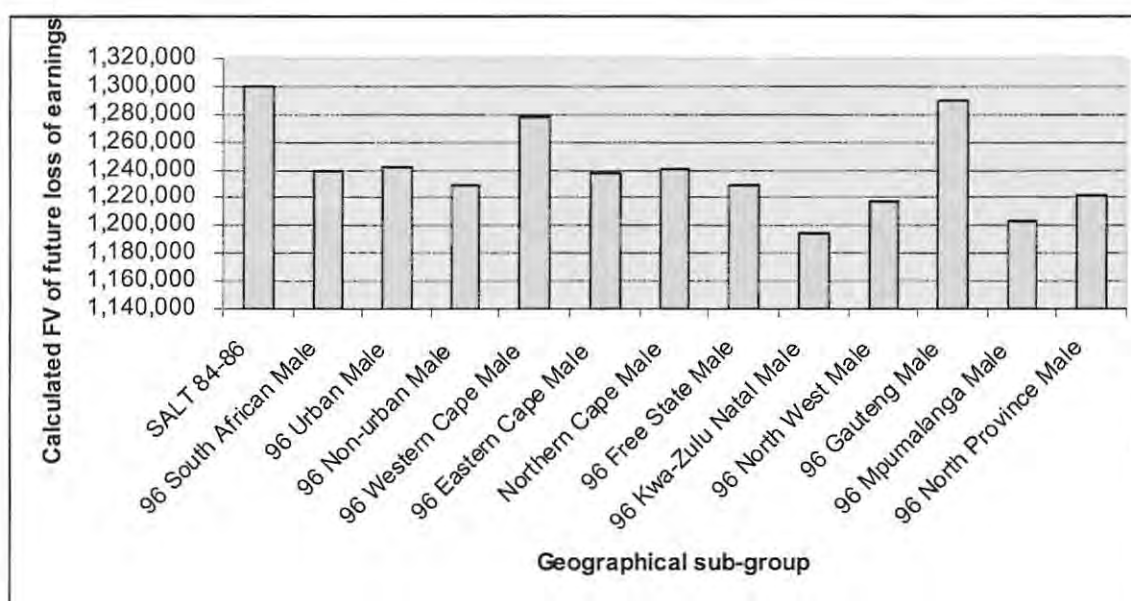


Figure 5.2 Future value of future loss of earnings as per SALT 84-86 and Abridged 1996 life tables.

Calculated from: Koch 2004:97 and Statistics South Africa 2000:7-18

Whilst the results from using the Abridged 1996 life tables shows a reduction in the damages awarded on the back of increased mortality contained in the tables, questions have been raised concerning the accuracy of the tables. Udjo (in Dorrington 2001:65), when using the same base data as for the Abridged 1996 tables, found that male life expectancy at birth was substantially lower than presented in the abridged life tables (Note Udjos' tables were never published and hence, are not available for further analysis). Dorrington *et al* (2001:67) dismisses the Abridged 1996 tables as showing mortality levels that are too high.

5.5 Centre for Actuarial Research Illustrative Life Tables 2001:

The illustrative life tables produced by the Centre for Actuarial Research (CARE) are based on mortality estimates from the reported household deaths from the 2001 census. It was highlighted by Dorrington *et al* (2004:78) that the data on child mortality captured in the census was not of an acceptable standard to produce official life tables, however, the adult mortality levels were of a far superior quality.

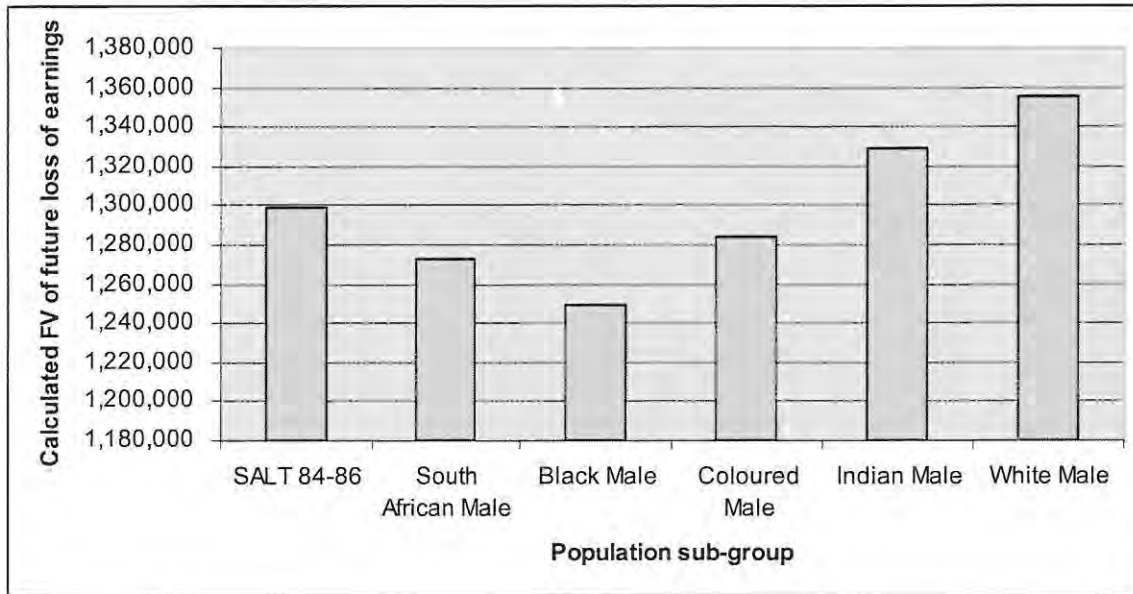


Figure 5.3: Future value of future loss of earnings as per SALT 84-86 and CARE Illustrative Life Tables 2001.

Calculated from: Koch 2004:97 and Dorrington *et al* 2004:97-99

Figure 5.3 depicts the damage valuations based on the 5 tables that make up the Illustrative life tables from Dorrington *et al* (2004:97-99) and the SALT 84-86 table 5 (Koch 2004:96-97). It can be seen that damages calculated from the South African Male, Black male and Coloured male all fell below the valuation from the SALT 84-86 table, by 2%, 4% and 1 % respectively, which is a promising result as this means that the measure of Coloured mortality is lower than that what was measured in the SALT 84-86 tables. Whether this 1% decrease is a true reflection of what has happened to mortality levels can not be determined conclusively. While for the Indian and White tables the value increased by 2% and 4% respectively.

South Africa already has a well established Black middle class, whose socio-economic circumstances should result in a reduced mortality compared to less fortunate individuals. For this reason, application of a blending between racial tables based on income levels (as used by Koch on the SALT 84-86 tables) would prove far superior if utilizing racial based tables. This could be achieved by comparing income levels of different population groups and then applying a weighting on mortality level of the groups to arrive at an income based table.

The 2001 South African Census income data for individuals was collected along racial lines, and then further divided according to monthly income (Statistics South Africa 2004C:71-75). If the number of individuals in an income group is known the percentage from each racial group can be used to determine the expected mortality effects for that income level.

In the case of the hypothetical damage calculation, the claimant would fall into the R3,201 to R6,400 grouping. Table 5.2 shows the racial break down of this income grouping as presented in the Primary Tables from the 2001 South African Census (Statistics South Africa 2004:74), as well as the percentage contributed by each racial group to the income bracket.

	Black	Coloured	Indian/Asian	White	Total
R3,201 to R6,400	321,038	96,653	63,445	253,742	734,878
% Contribution to Income Bracket	44%	13%	9%	35%	100%

Table 5.2 R3,201 to R6,400 income bracket by racial group.

Adapted from: Statistics South Africa 2004C:74

From Table 5.2 it can be seen that to obtain an income bracketed life table for the year 2001, the table should reflect 44% Black, 13% Coloured, 9% Indian/Asian and 35% White mortality. From the racial breakdowns table 5.3 has been constructed to represent the required mortality contributions from each racial group as found in the Illustrated CARE 2001 tables (Dorrington *et al* 2004:97-99).

	Survivors
35	83,818
40	79,341
45	74,564
50	68,772
55	62,337
60	54,700
65	46,413

Table 5.3: R3,201 to R6,400 income bracketed life table.

Based on table 5.3, the future value for Future loss of earnings is calculated as being R1,305,870. This would indicate that the mortality effects faced by the average individual earning R4,000 per month (or R48,000 per year) is lower than the average coloured mortality as measured by SALT 84-86 . This poses questions as to how the income brackets, as presented by Koch (2004:96-97), were arrived at to equate to the SALT 84-86 table, considering that the White contribution to the income bracket is almost three-fold, more than, that of the Coloured group, indicating that maybe the income bracket divisions should be revised.

If one looks at the income brackets assigned to SALT 84-86 table 5, as presented by Koch (2001:94-95), the levels are set between R35,000 and R65,000 per year. This would equate to between R2,916.75 and R5,416.66 per month. Looking at the 2001 South African Census data on individual incomes this would correspond to a racial breakdown very similar to that presented in table 5.2. Thereby, confirming the suspicion that the linkage between the SALT 84-86 table 5 and the income bracket assigned to it are ill suited, especially considering the small proportion of the population in the bracket that comes from the Coloured racial group.

5.6 Adult Mortality Life Tables 1997-2004:

Stemming from the Adult Mortality study from 1997 to 2004, Statistics South Africa produced life table values on survivorship, based on the register of national deaths. Although the life tables are not complete due to the fact that the study did not consider

the age group of 0 to 14 year (Statistics South Africa 2006:15). The survivor ratios presented allow for the calculation of the risk of early death and so the results are present for completeness. In addition, the ratios were not broken down beyond gender, and so only figures for South African males and females are currently available.

Figure 5.4 plots the resultant future value for the future loss of earnings calculation. From this it can be seen that although the 1997 valuation is higher than that produced using the SALT 84-86 table, there is from that stage a consistent decrease in the value. This is in line with Dorrington *et al's* (2004:67) statements that mortality for the South African population has been decreasing since 1996.

Although the tables would be of little use due to their high level (no sub-population break downs) when it comes to damage calculations, they do help confirm suspicions of the over estimation of mortality in the Abridged 1996 mortality levels. This is seen when looking at the calculated damages using the Abridged 1996 table versus the Adult Mortality Life Tables.

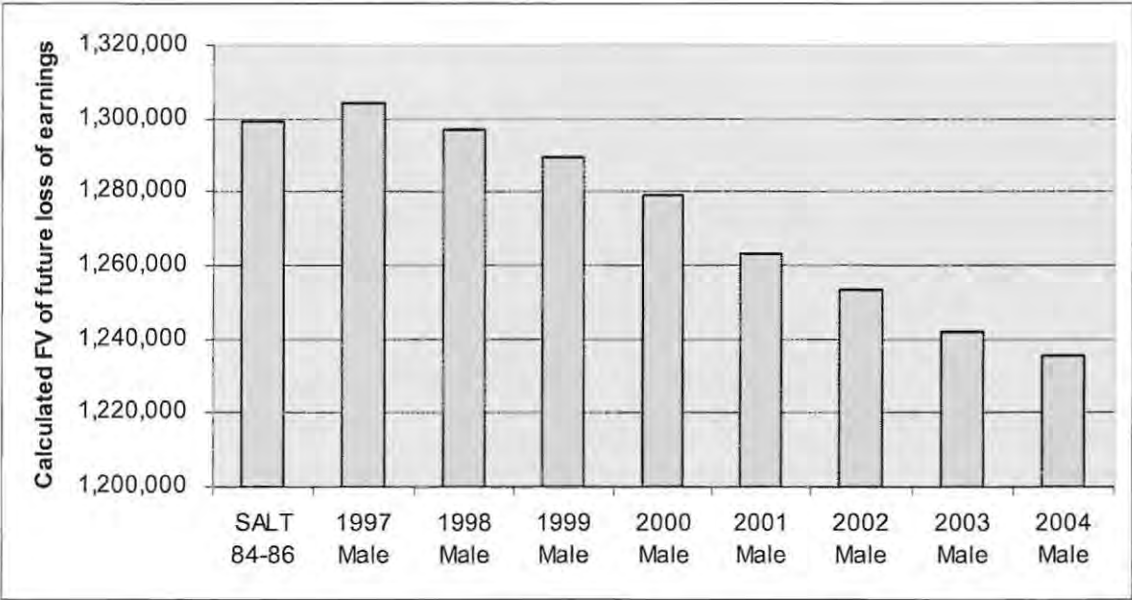


Figure 5.4 Future value of future loss of earnings as per SALT 84-86 and Adult Mortality Life Tables 1997-2004.

Calculated from: Koch 2004:97 and Statistics South Africa 2006:178

Figure 5.5 shows that the damage value based on the Abridged 1996 table is lower than that for all periods until 2004. This result implies that the mortality effects encapsulated in the Abridged 1996 table is lower than that for the Adult mortality tables from 1997 up to and including 2003. For this to hold true there would have had to have been a decrease in mortality post-1996, a situation that is not supported by any sources, all of which propose an opposing scenario of rapid rises in mortality post-1995.

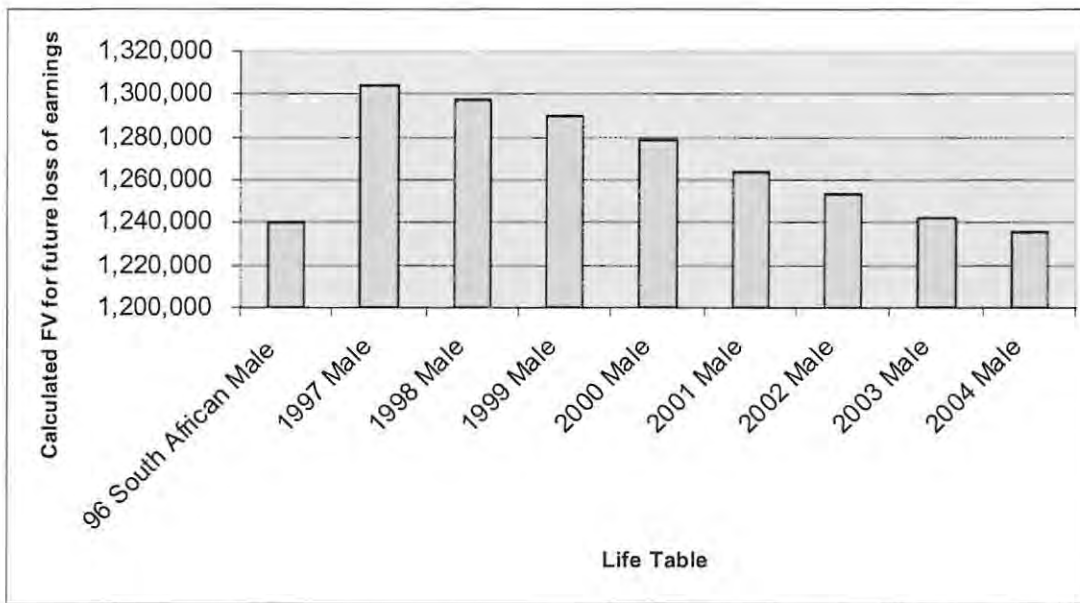


Figure 5.5 Future value of future loss of earnings as per Abridged 1996 and Adult Mortality Life Tables 1997-2004

Calculated from: Statistics South Africa 2000:7-18 and Statistics South Africa 2006:178

5.7 Conclusion:

All of the alternative life tables considered as potential substitutes for the SALT 84-86 tables as the basis for risk of early death calculations suffer from some sort of deficiency. All of the tables were published in an abridged format, making a direct comparison with the original damage calculation in chapter 3 misleading. However, once the original calculation was adjusted to account for the difference in format, only one set provided promising results.

The Abridged 85-94 tables seemed to return results that were too high, with all but the Black table showing decreased levels of mortality. The Abridged 96 table shows the expected increases in mortality and corresponding decrease in award values, however common opinion is that these tables over-estimated the mortality increases, and are not looked upon favourably.

The tables based on the 2006 Adult Mortality paper (Statistics South Africa 2006:178), confirm the over estimation of the Abridged 96 life tables, and also show a more gradual, though continual increase, in mortality as well as the corresponding decrease in award values. Due to the tables not being broken down below a national level, means that their use would be of limited value. This view is held due to the commonly accepted notion that different sections of the national population face different mortality levels, whether this split is according to racial groups, income levels or geographic distribution.

The Illustrative tables produced by CARE (Dorrington *et al* 2004:97-99) did provide reasonable results inline with the expected increase in mortality in the South African population. This is confirmed by the fact that the damage award when using the CARE Coloured table was lower than when using the SALT 84-86 table 5 (set at 100% of SALT 84-86 Coloured mortality). Whether the change is at the correct level cannot be confirmed, considering that the table is promoted as an illustration only, due to the problems encountered with child mortality levels. The manipulation of the table to align it with income levels did produce an interesting finding, which brings into question the direct use of the suggested table by Koch. It was found that the Coloured population made up only 13% of the total population found in the income bracket, bringing into question whether setting the mortality equal to the coloured table is in fact accurate, considering that White males (for whom there is an appropriate SALT 84-86 table) make up a larger proportion of the income bracket.

Chapter 6: Alternatives to Lump sum Settlements

6.1 Introduction:

When a claimant has been granted a damages award, the amount settled on can be made up from several different heads of damages, each separately calculated to theoretically meet the individuals' needs for a pre-determined amount of time. Once the award has been made, what happens to the award is at the sole discretion of the claimant. This imposes a large burden on the claimant in terms of how the money should be used. Sometimes leading to individuals (or those to whom the funds are entrusted) squandering money meant to support the person in later life. For examples of such miss-use of monies by claimants, the claimant's family members, their attorney and their curators consult Road Accident Fund 2002A (605-610).

Thus far, only lump sum settlements based on actuarial life tables have been considered as a means of compensating for future losses. Structured settlements allow for a more flexible approach to the settlement than offered by a direct lump sum settlement, while at the same time providing advantages to both the defendant and the claimants. South African delictual law calls for once-off restitution, most commonly achieved through awarding the claimant a sum of money from which to support him/herself for as long as the condition they are claiming for is expected to last. It is proposed that similar results can be achieved if that lump sum were structured in such a way as to ensure the claimant receives a portion of the damages at pre-determined intervals in the future.

In order to be able to compare structured settlements against their lump sum alternatives, it is important to know what they are and how they are calculated. This is followed by a look at the advantages that a structured settlement offers over a lump sum settle and also the disadvantages to such an approach.

6.2 An Introduction to Structured Settlements.

The Department for Constitutional Affairs of the United Kingdom (2000:14-15) defines a structured settlement as:

“an agreement settling a claim or action for damages for personal injury on terms whereby (a) the damages are to consist wholly or partly of periodic payments; and (b) the person who is to receive the payments must receive them as the annuitant under one or more annuities purchased for him by the person against whom the claim is brought, or if he/she is insured against the claim, by his/her insurer.”

Based upon this definition, it can be seen that a structured settlement is simply an annuity purchased for the benefit of the claimant by the defendant. It should be noted that if a lump sum is awarded and from the lump sum benefits an annuity is purchased, this is not considered a structured settlement. The naming of the approach as Structured Settlements stems from the fact that the underlying annuities are none standard interest bearing securities, and as such, can be structured to meet the needs required of the instrument on a case-by-case basis (Lewis 1993:530). An annuity is further defined by Goodspeed (2004A:90) as a “periodic payment arising from a contractual obligation”.

As the definition indicates, not all of the compensation needs to be structured in terms of an annuity. This presents the advantage of allowing damages for past loss of earnings and medical expenses, as well as for general damages, to be paid via lump sum to meet the claimant’s immediate needs and cover expenses already incurred. While future loss of income and future medical expenses can be paid via either an annuity or undertaking to meet the expenses incurred.

In layman terms this means that a structured settlement is simply a way in which damages can be paid both via lump sum and also via periodic payments at pre-defined intervals for future losses/expenses. In the next section, on the calculation of structured settlements only future losses/expenses will be considered, as it assumed that past losses/expenses would still be settled via lump sum.

6.3 Calculation of Structured Settlements:

The calculation of a structured settlement can take on various forms, depending on how damages have traditionally been paid to claimants. If the traditional form of settlement has been via lump sum payment, then it is conceivable that the defendant would offer to setup the structured settlement on behalf of the claimant in return for a reduction in the total value to be paid. The remaining amount is then used to purchase an annuity on behalf of the claimant. If however structured settlements are the normal vehicle used for damage payments then the approach would differ in that the claimant would not have to forgo a reduced total payment for the benefit of the future cash flows. This is due to the fact that the annuity portion of the structure would not be seen as a substitute for a lump sum. The mathematics behind the calculation remains the same however, and follows traditional annuity formula.

When calculating the annuity portion of a structured settlement there are two approaches that can be taken, these are top down or bottom up. In the top down approach, initially a lump sum settlement amount is calculated and is then structured into an annuity to provide future payments for a predetermined time (Department of Constitutional Affairs 2000:15).

This means that if the hypothetical example, first used in chapter 3, were to be paid via a structured settlement using a top down approach, the present value for future loss of earnings, R494,575 , and for future medical expenses, R5,289 would be pooled and used to purchase an annuity to the total value of R499,864. It can be seen, that the top down approach eliminates none of the short comings of the lump sum settlement, as the same procedures are followed and hence, future payments are reduced due to mortality risks which are borne by the claimant (Charles *et al* 2000:6). It does, however, remove the investment risk from the claimant, as they are not faced with the decision as to how best invest their award to ensure their future needs are met. Use of the top down approach does introduce an additional risk to the claimant though, in that they are left to find an annuity that they can afford based on the calculated lump sum. The future payments of which will depend on the situation of the annuity market at that point in time, which is directly linked to the interest rate

(Charles *et al* 2000:6). In essence, a top down structured settle is simply an alternative payment vehicle to a lump sum.

To determine what the future payments stemming from the annuity with a future value of R499,864 would be, it is necessary to amend the present value formula for annuities from Goodspeed (2004B:81), so that it will give the payment value.

$$PV = PMT \left[\frac{(1+r)^n - 1}{r(1+r)^n} \right].$$

Equation 6.1

(Goodspeed 2004B:81)

Where PV = present Value of the annuity

PMT = the future payments stemming from the annuity

r = the nominal annual interest rate used for the annuity

n = the number of periods over which the annuity will payout

Equation 6.1 can be transformed as follows:

$$PMT = PV / \left[\frac{(1+r)^n - 1}{r(1+r)^n} \right].$$

Stemming from the initial example in chapter three:

r = 2.5%

n = 31

Based on the above values the payouts from the annuity would be

$$\begin{aligned} PMT &= 499,864 / \left[\frac{(1+0.025)^{30} - 1}{0.025(1+0.025)^{30}} \right]. \\ &= 23,882.32 \end{aligned}$$

The above calculation means that until the claimant turns 65 (normal retirement age) he/she would receive an annual payment of R23,882.32. At first glance this seems greatly reduced from the R48,000 that would have been earned had the injury not been incurred. To this their subsequent income of R14,000 should be added, bring the total to R37,882.32 per annum. The difference between this value and their uninjured potential (a reduction of R10,117.68 per annum) is due to the reductions made for risk

of early death and potential periods of unemployment (as accounted for by the 17.5% reduction for general contingencies).

The above example is based on the current interest rate being the same as that applied by the courts for the initial discount. In reality though, the discount applied by the courts is often based on a long term average rate and could at any one stage not relate directly to the real rate of interest in the markets at the time the annuity is to be purchased. If the rate at time of purchase is lower than the discount used by courts by 1%, the result is a reduction in the annual payout of 13% (to a value of R20,183.93 per annum, aptly illustrating the additional risk faced by the claimant).

The methodology differs significantly when using a bottom up approach, as it does not take into account the general population via mortality tables but rather focuses on what the individuals' future needs are likely to be. If again, the example from chapter 3 is to be considered and analyzed from a bottom up perspective, it would come to light that the claimant needs to be compensated for their future loss of income amounting to R34,000 each year until normal retirement age of 65 (the difference between the claimants injured and uninjured future income cash flows). Based on this future loss, an annuity would be structured that would provide the claimant with the short fall suffered of R34,000 each year until the age of 65.

Traditionally, literature prescribes that the annuity should be structured to expire at the time of death of the claimant. However, it is present here that if the annuity is used to compensate for only future loss of earnings, it should terminate at normal retirement age. If the claimant had not been injured, this is the date at which they would be required to turn to their savings/pensions to support themselves. Considering they would receive full compensation equal to their uninjured scenario, they should also be expected to contribute in the same way to account for post retirement needs. This would result in them having accumulated the required pension/savings by 65 to support themselves for their remaining life.

To arrive at what the annuity would cost the defendant, one uses the original present value for annuities.

$$PV = PMT[(1-(1/(1+r)^n))/r].$$

(Goodspeed 2004B:81)

Again using the discount rate of 2.5% and the fact that the annuity should payout until the claimant is 65 years old (30 years), the present value of the annuity is calculated as R711,629.95. While the bottom up approach results in a substantial increase in the amount to be paid by the defendant, it is more likely to result in restoring the claimant to the position they would have been in, had the accident not occurred (Koch 1993:59), thus, more successfully achieving the true goal of damage awards.

It should be highlighted that while the top down approach took the total award for the future losses/expenses into account, the predicted future medical expenses were not included in the bottom up approach. The reason for this is that the claimant would most likely be better served by a separate annuity structured to meet the specific needs of the required operation.

Following this logic, an annuity could be structured to payout an amount of R10,000 (the current price of the operation) in ten years time (the approximate date that the operation should be performed). The fact that there is only a 75% chance that the operation would occur, could result in the defendant being unwilling to buy an annuity that would pay out the full cost, as this could lead to over compensation. Instead, the defendant could undertake to cover the expenses of the operation if it is required, this is know as an 'undertaking' (Road Accident Fund 2002A:618) an approach used on occasion by the Road Accident Fund to meet the costs of future health care and rehabilitation (Road Accident Fund 2004A:619). It should be noted that the way in which the Road Accident Fund has utilised and administered their undertakings for coverage of future medical expenses has come under a lot of criticism. This is due to the way in which claimant first have to incur the cost and then submit for repayment from the fund, some times having to wait months until they are compensated (Road Accident Fund 2002A:638-639).

Some of the advantages of structured settlements have already been touched on; a more comprehensive list follows as well as the disadvantages of such settlements.

6.4 Advantages and Disadvantages of Structured Settlements:

The advantages of structured settlements are shared between both the claimant and the defendant. It is important to note that an advantage to one party does not necessarily correlate directly to a disadvantage to the other.

6.4.1 Advantages and Disadvantages to Claimants:

When considering structured settlements against the commonly used (at least in South Africa) lump sum settlement, the advantages can be seen to outweigh the disadvantages.

Possibly the biggest advantage to claimants when using a structured settlement is the removal of deductions for the risk of early death. The reason that the risk is removed from the claimant and transferred to the defendant is that as an individual the claimant can not do anything to reduce this risk, even if they had perfect health before being injured. When one considers powerful defendants, such as insurance firms, they are able to pool their risks. When a claimant who benefits from a structured settlement passes away, the annuity is dissolved and any unused funds revert to the defendant, this means that on average, while some claimants will draw on their annuities until exhaustion others will pass away and the remaining funds will revert to the pool (Lewis 1993:534).

In addition, the claimant does not have to worry about how a lump sum should be invested to ensure it meets their future need and subsequently the associated costs are also avoided (Charles *et al* 2000:11). Due to the fact that the annuities used would only be of the highest standard, the default risk is greatly reduced when compared to the possibility of bad investments that could be made if having to choose how to invest what represents ones total income at once, as would be required with a lump sum (Charles *et al* 2000:12).

The claimant is also protected against running out of funds before they are meant to, due to the fact that the annuity only pays out at pre-determined dates (Lewis 1993:534-535). One last advantage, although not applicable in South Africa is the

fact that payments from annuities are often tax free in countries where structured settlements are used for example the United States of America, Canada, the United Kingdom (Charles *et al* 2000:10 and 17) and Australia (Road Accident Fund 2002A:647).

On the down side, for the claimant when accepting a structured settlement is the fact that they lose a great amount of liquidity and discretion as to how their funds should be utilized, as the funds would be invested on their behalf by the defendant (Lewis 1993:539-542). In all likelihood a claimant with detailed knowledge of investments would also reap lower returns from an annuity than if given the lump sum with which to invest at their discretion (Lewis 1993:542-544). Lastly, the dependants of the claimant will be less likely to benefit to the same extent if the claimant dies earlier than expected. This is due to the fact that, under an annuity when the claimant dies the remaining value of the settlement would default back to the defendant, where as if a lump sum were used the claimants dependants would inherit any of the unused funds (Lewis 1993:546).

6.4.2 Advantages and Disadvantages to the Defendant:

The first advantage that defers to the defendant when using a structured settlement is the possibility of reduced trial costs, in that expensive experts are not required to give evidence and trials can be concluded in a more timely fashion (Charles *et al* 2000:12). In addition, the defendant removes the risk of over compensation (directly related to the loss of potential windfall by claimants heirs upon death) as all unused funds can be returned to the defendant (Charles *et al* 2000:12).

The only real disadvantage, identified by Charles *et al* (2000:12), to defendants is that it is difficult for the defendant to pay reduced damages due to contributory negligence if the required settlement method is a bottom up structured settlement.

6.5 Conclusion:

When one considers the uncertainty surrounding the twenty year old SALT 84-86 life tables currently used in calculating lump sum settlements. The fact that a bottom up structured settlement is more able to place claimants in a position similar to what they would have faced without injury and the added benefits provided by structured settlements it is hard to argue against their adoption. A view supported by Attorney G Hobbs of Adams and Adams (in Road Accident Fund 2002A:648) who submitted a proposal that a system of structured settlements be used by the Road Accident Fund.

Already, in South Africa certain benefits are paid along similar lines as a structured settlement would be, for example disability and old age pensions, both of which could payout the total contributions by the recipient in a lump sum, but rather make periodic payments. The superiority of structured settlements and their ability to best serve claimants is confirmed by considering that they are the normal settlement method used in the United States, Canada, the United Kingdom, Australia, France, Belgium, Germany, Denmark, Sweden and Italy (Road Accident Fund 2002A:645-647) for the settlement of future loss of earnings, and so should be seriously considered for adoption as the preferred calculation and settlement method in South Africa.

Chapter 7 Conclusions:

When assessing damages due to an injury in order to simplify the calculation of the damages, it is often broken down into separate heads of damages, both in terms of expense/loss type as well as between past and future losses.

Past losses/expenses are normally easier to quantify due to the fact that there is often concrete proof that they were incurred. Challenges are faced by those who are self employed and also those who are employed in the informal sector, when it comes to proving what their true past loss of earnings has been. Past loss of earnings can be reduced on the grounds that even if uninjured, the claimant may have faced periods of unemployment. A method to arrive at a fair basis for this reduction was shown via the use of past unemployment levels based on completed education, as found by the bi-annual labour force survey.

When assessing future losses/expenses the approach is far more complicated than is the case when looking at past losses. This is because mortality tables are used to reduce awards in line with the risk of early death. The future value of the award is then reduced to the present value by discounting the amount at an agreed rate per year, this is due to the fact that it is expected that the award be invested to provide for future needs and hence would earn a return and increase in value. Lastly, further reductions are made for uncertainties that lie in the future, such as periods of unemployment and the potential for not incurring certain expenses that they are compensated for.

There is large problem with the underlying tables used in the actuarial calculations for future loss of earnings and medical expenses. This is due to the fact that it does not incorporate the mortality effects of the Black population, as at the time of their calculation data quality for the group was very poor. This means that 76% of the population is not represented in the tables currently being applied, a group that can be seen to face increased mortality compared to other sections of the population. A second problem identified was that all sources indicate that there has been an increase in mortality levels in the South African population, a factor that is not captured due to the use of the old life tables. The combination of these two factors could lead to over

compensation. If possible over compensation is accounted for by a general contingency reduction, it removes the credibility of the entire actuarial calculation. Hence, questions should be asked whether the process is really worthwhile considering the costs that are incurred in the need to hire an actuary to perform and present the calculations to the courts.

When the alternative sets of life tables were applied to the hypothetical damage calculation, some interesting results were obtained. Both sets of abridged life tables calculated by Statistics South Africa for the periods 1985 - 1994 and for 1996, returned disappointing results. The first set returned increased damages for all groups except for Black males, an unlikely scenario when one considers the weight that the group would contribute to the South African Male mortality profile, which was still lower than for the SALT 84-86 table. The Abridged 1996 tables presented opposite results. As they indicate the mortality levels are far higher than what would be expected, a view held by many other sources, and confirmed when compared to the Adult Mortality tables (which showed that the mortality levels calculated in the 1996 abridged tables were far lower than any subsequent period, until 2004). The Adult mortality tables returned believable results, the fact that they were only calculated on a national level means that they would add little value if applied in real damage calculations.

The set of tables that did provide promising results were the CARE tables based on the 2001 census results. The tables showed increased mortality levels in the Black, Coloured and South African males' profiles, with the expected drop in calculated damages. When the tables were aligned to reflect the income group used in the hypothetical example, additional questions were raised concerning the way the SALT 84-86 tables had been aligned to income groups. The reason for this is that for the income group R42,001 to R84,000 per annum, the mortality was set at 100% of the Coloured mortality profile. From the 2001 South African census it was seen that the Coloured population makes up only 13% of the income bracket and is far outweighed by the White population, who show lower mortality levels. This indicates that the SALT 84-86 tables, when aligned to income brackets, are not truly reflective of the population who fall within that bracket.

While it has been shown that the SALT 84-86 life tables are not aligned with current mortality levels and nor are the income bracket alignments congruent with the racial breakdowns in the South African population, the results obtained from three of the four alternative tables did not return vastly different results. Indicating no conclusive evidence for a need to change the basis of the calculations. The CARE tables do provide more realistic damages, but they are inherently flawed due to the inaccuracies in the child mortality rates that the tables are based on. A fact that would most likely result in any damages calculated with them as their basis not being accepted by South African Courts.

With this in mind the use of structured settlements was used to illustrate how damages could be calculated without having to rely on mortality estimates in South Africa, which are far from ideal.

When following a structured settlement approach there are two methods that can be followed. The first, top down, relies on initially calculating a lump sum amount that could be settled on and then converting this into an annuity to provide a certain level of payments at periodic dates in the future. There are several draw backs to following the top down approach. The first being the fact that it does not remove any steps from the normal lump sum calculations, and so ultimately still rests on the flawed mortality estimates. A second limitation of the approach is that it opens the claimant to risks in the form of current market conditions. Due to the fact that the lump sum is initially calculated, the value of the lump sum is then used to purchase the annuity making the top down approach simply an alternative payment method. If the interest rates are lower than the capitalisation rates used to arrive at the lump sum, then annuities will be more expensive, resulting in lower periodic payments in the future.

The second structured settlement approach, bottom up, reflects a truly alternative method of both damage assessment and payment. Using this approach, the claimant's future needs are considered and an annuity structured to match these needs with future payments equalling the needs. The use of annuities effectively removes the mortality risk from the claimant to the defendant, resulting in increased damages. Although this would seem to put the defendant at a disadvantage, it can actually be to their benefit in that any damages remaining at the end of the claimants life cannot be passed on to

dependants and are returned to the defendant, thereby removing possibilities of over compensation. The claimant too receives advantages. Firstly, through the removal of the mortality risk and then secondly via not having to bear the responsibilities of investing and managing their lump sum, so as to ensure it meets their future needs and being ensured that they will receive periodic amounts for a predetermined time, suggested to run until normal retirement age. With all of the advantages presented by the use of bottom up structured settlements as opposed to the currently used lump sum approach, it is suggested that the approach be present to the required authorities as the settlement approach of choice.

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