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Estimates for Rehabilitation Liabilities: Points to Consider

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Estimates for Rehabilitation Liabilities: Points to Consider

Swee Chang and Sandra Chapman, ACC

Abstract

The purpose of this paper is to outline some of the considerations involved in estimating liabilities for rehabilitation services provided to clients of the Accident Compensation Corporation (ACC) Scheme in New Zealand.

This is not a highly technical paper - we have taken more of a qualitative than a quantitative approach. The paper focuses on the considerations in performing actuarial analysis on the social rehabilitation paid for serious injuries and vocational rehabilitation paid to injured workers under the ACC Scheme.

Due to the nature of ACC's liabilities it is important to consider the long-term view of the economic and political environment and take particular care not to react to the current situation without considering the cyclical nature of the insurance industry and the economy in general.

We do not have all the answers to the questions raised in this paper and would welcome discussion throughout the period of this conference (and beyond) on different ways to address these issues.

Keywords: Swee Chang, Sandra Chapman, Accident Compensation Corporation; rehabilitation, serious injury, vocational rehabilitation, liability estimation

Introduction

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Background on ACC

One of the unique aspects of New Zealand is that, since 1974, compensation for personal injuries has been provided on a universal no-fault basis. Whereas no-fault compensation for workplace and motor vehicle accidents is not uncommon, only the ACC Scheme in New Zealand extends this to accidents from any cause.

The funding of the Scheme is from a variety of sources: levies on business payroll and personal income, appropriations from Government for non-earners, licensing fees of motor vehicles, and petrol charges. Part of the challenge of managing the Scheme is balancing the interests of the various stakeholders.

Payments and services provided under the ACC Scheme

Eligibility

For a person to be eligible for coverage under the ACC Scheme, they must have suffered an injury for which they have cover under the Injury, Prevention, Rehabilitation and Compensation (IPRC) Act 2001.

The personal injury must be of the following kind:

- physical injuries suffered by a person; or
- death; or
- mental injury suffered by a person as a result of physical injuries, a criminal sexual offence performed by another person or due to witnessing a traumatic event while in the work environment; or
- damage to dentures or prostheses;

And the personal injury must be the result of:

- an accident to the person; or
- injury suffered whilst receiving medical treatment; or
- work related gradual process, disease or infection.

An accident to the person is defined as any of the following occurrences:

- application of force or resistance external to the human body
- inhalation or oral ingestion of a foreign substance (excluding virus / bacteria)
- burns or exposure to rays of any kind (excluding exposure to the elements)
- exposure to the elements that results in incapacity for a period exceeding 1 month, or in death.

Coverage by Account

For funding purposes, ACC claims are allocated to an Account, depending on the:

- cause of the accident resulting in personal injury, and
- work status of the client.

Payments and services provided **do not** vary by Account. Figure 1 shows how claims are allocated to each Account:

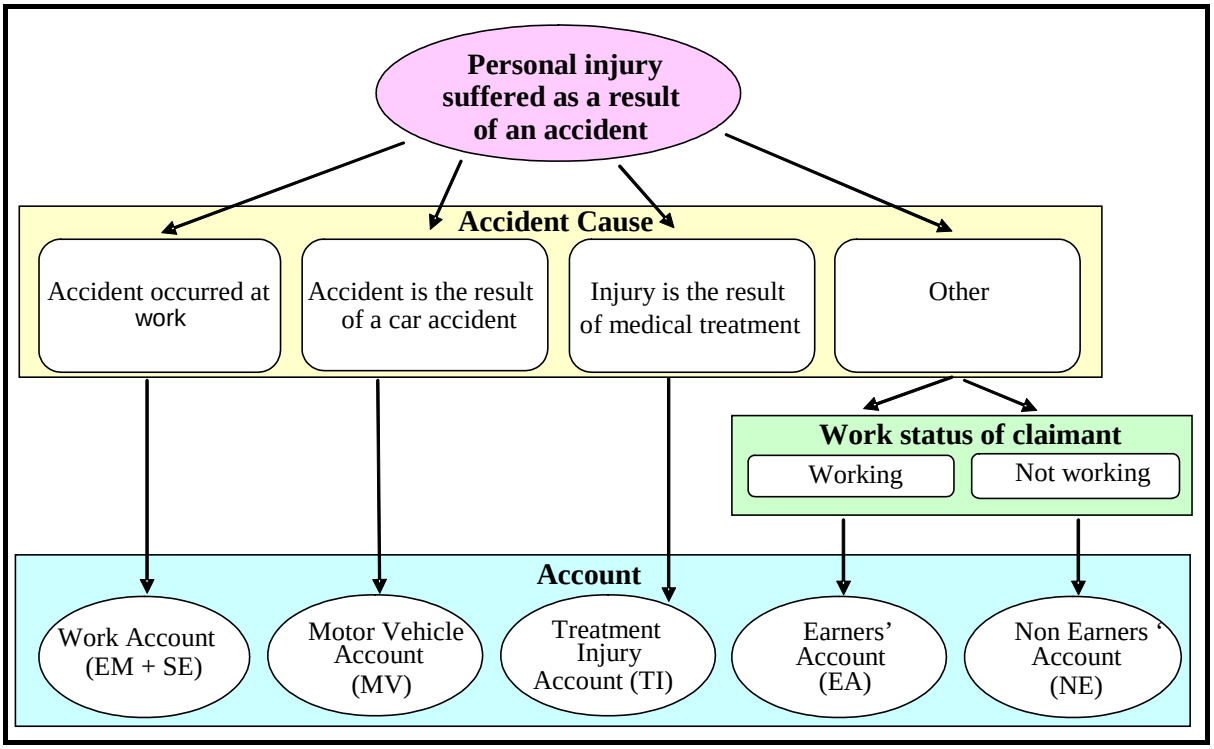

Figure 1: Allocation of claims to Account

Compensation/rehabilitation provided

The following payments are available for ACC claims:

Weekly compensation non fatal – Weekly income replacement payments to the value of 80% of pre-injury earnings (payment amount capped at NZ$85,178 per annum for year ending 30 June 2009) are payable for all persons deemed unfit to work. People who have the ability to work but are unable to find suitable work are not entitled to receive income replacement payment. A stand down period of 1 week applies before payments commence, which must be covered by the employer for a work injury claim.

Weekly compensation fatal – Weekly compensation is payable to the surviving spouse and dependants of a fatally injured client, subject to a maximum of 100% of weekly income replacement payment to which the fatally injured person would otherwise have been entitled.

This payment is payable to the surviving spouse for a maximum of 5 years or until they cease to have dependants.

Social Rehabilitation – costs for interventions and support provided to assist in restoration of the client's independence, in particular, to restore the client's life skills and abilities that are essential for every day functioning. This includes provision of aids and appliances, attendant care, child care, home help, education support, home and vehicle modifications and training for independence. These payments can be grouped under the sub-categories of capital, care, assessment and other.

Vocational Rehabilitation – payments for services designed to assist an injured person back into full-time work, whether that is the same as their pre-injury work or something more suited to their post-injury abilities.

Treatment – Medical, ambulance and hospital costs, elective surgery, therapies such as physiotherapy and post-acute rehabilitation.

Lump Sums – Provided to clients whose injury causes at least 10% permanent whole body impairment as defined by the American Medical Association (AMA) guidelines (including mental impairment). The amount of the lump sum provided is according to a predetermined scale based on impairment level, with a maximum of NZ$117,184 for the year ended 30 June 2009. Between 1 July 1992 and 31 March 2002, lump sums were replaced by a regular quarterly independence allowance (IA) payment. Clients who qualified for IA payments during this time will continue to receive the quarterly payments while their impairment remains above 10%.

There is no facility for common law in New Zealand and weekly compensation payments make up a large proportion of the costs. Actuarial assessment is required for both outstanding claims liabilities and pricing of projected levy rates. The valuation of ACC's outstanding claims liability as at 30 June 2009 puts the breakdown of the payment types and Accounts as in Table 1.

Table 1: Estimated Outstanding Claims Liability as at 30 June 2009 (NZ $million)

Payment Type	Total	Motor Vehicle	Non-Earners'	Earners'	Residual Workers	Work	Treatment Injury
Social Rehab SI	8,467	3,342	2,225	815	633	161	1,292
Voc Rehab	253	56	31	93	17	49	7
Non fatal weekly comp	7,022	1,939	366	1,790	1,296	1,309	322
Medical	2,018	252	600	580	270	220	96
Hospital Rehab	1,620	260	269	548	246	176	121
CHE	1,415	405	120	321	339	145	85
Social Rehab NSI	1,328	198	157	133	612	80	147
Indep Allowance	830	131	395	136	105	22	40
Death Benefits	557	202	9	202	85	45	14
Lump Sum	211	42	49	38	11	37	34
Other Rehab	47	14	13	3	6	3	8
Amb + Bulk	18	3	10	3	0	1	0
Total	23,786	6,845	4,245	4,662	3,619	2,248	2,167

As can be seen from the figures in Table 1, nearly two-thirds of the total outstanding claims liability comes from social rehabilitation paid to serious injury clients and weekly compensation paid to injured workers. The bulk of the serious injuries are concentrated in the Motor Vehicle, Non-Earners' and Treatment Injury Accounts, while vocational rehabilitation payments are associated with weekly compensation paid to injured workers in the Earners' (non-work injuries), Residual (injuries prior to 1 July 1999) and Work (work-related injuries) Accounts.

Social Rehabilitation

Purpose and benefits of social rehabilitation

The purpose of providing social rehabilitation assistance is to restore the client's independence to the maximum extent allowable, in various areas of their everyday life, as described in the Injury Prevention, Rehabilitation and Compensation (IPRC) Act 2001.

The social rehabilitation benefits provided by ACC can be grouped as:

- Non Capital services which include:
  - personal support (attendant care, home help or childcare - provided by contracted or privately engaged care providers including family members)
  - residential support
  - education support
  - training for Independence
  - consumables
- Capital assistance which include:
  - aids and appliances
  - vehicle and housing modifications.

These benefits are provided to both serious and non-serious injury clients.

The focus of this section is on the social rehabilitation support provided to serious injury clients.

Social Rehabilitation Serious Injury Cases:

As at 30 June 2009, there were 4,256 serious injury clients receiving social rehabilitation support over the previous 12 months. Figure 2 shows the distribution of serious injury cases by current age group and injury profile.

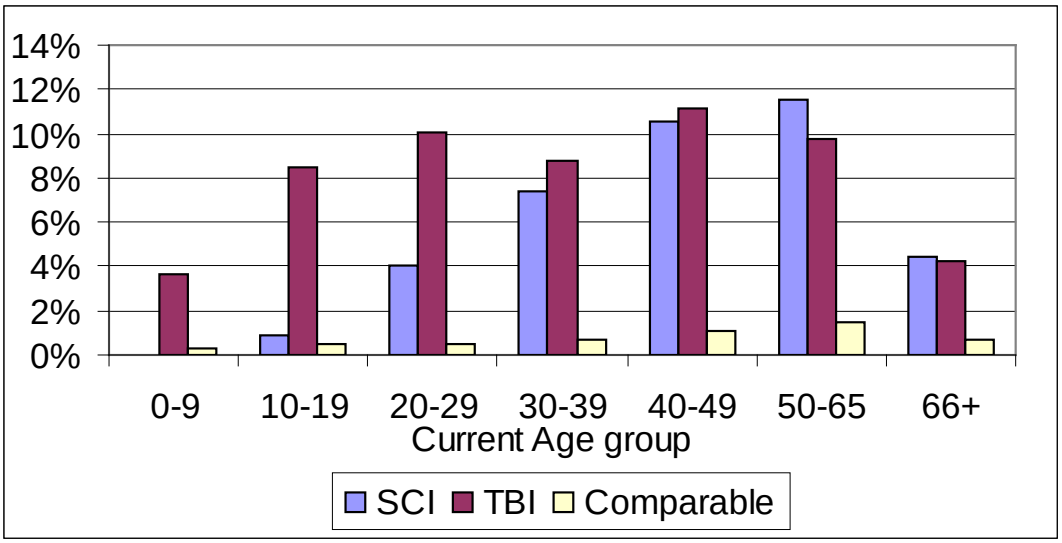

Figure 2: Current Age and Injury Profile of Serious Injury Case[i]

(SCI – spinal cord injury ; TBI-Traumatic brain injury; Comparable – other including burns, multiple amputations and blindness)

Points to note:

- except for the 0-9 and 66+ groups, the number of brain injury cases are evenly distributed across all age groups
- except for the 66+ group, the number of spinal cord injury cases increases with age
- for the under 10 age group, almost all are brain injury cases.

Figure 3 shows the distribution of the number of serious injury cases from accidents in years 1995 to 2007, by age at accident and Account:

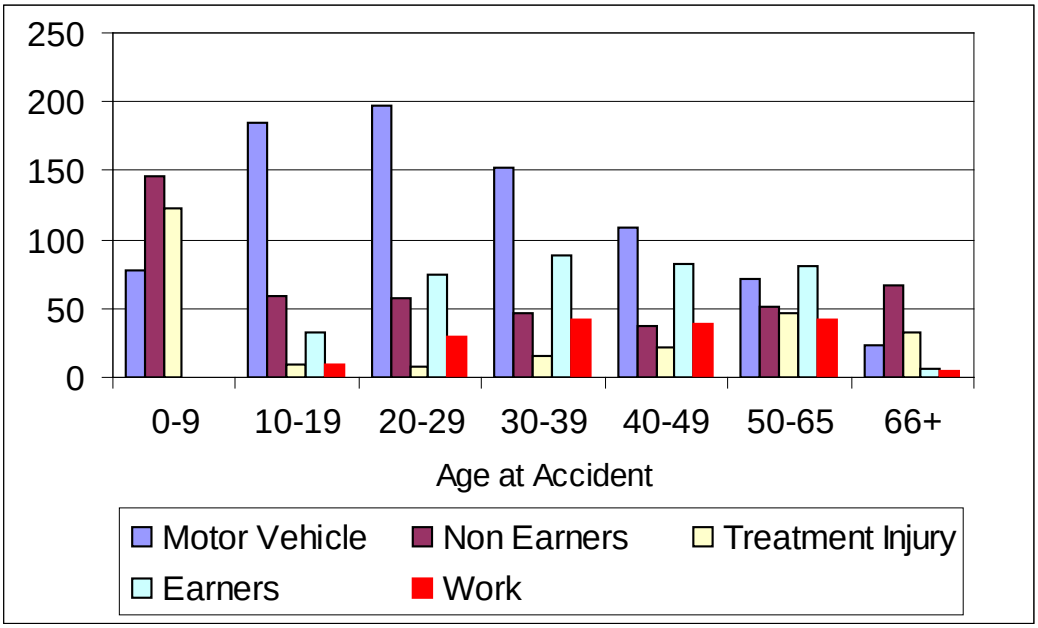

Figure 3: Number of Serious Injury Cases by Accident Year from 1995 to 2007

Note that there is usually a long delay, typically from complications during delivery, treatment injury and inflicted traumatic brain injury (abuse), in reporting serious injury cases in the 0-9 age group. Hence, for this analysis, we have only included accidents up to the year ending 30 June 2007.

On average, about 16% of the serious injury cases reported to ACC each year are associated with children under the age of 10. Causes of these injuries include:

- Motor Vehicle Account – crash involving motor vehicles (passengers or pedestrians)
- Non Earners' Account – assault, abuse, or falls either at home or at school.
- Treatment Injury Account - complication during delivery or the consequences of a failed surgical procedure.

Around 25% of ACC's serious injury cases were younger than 30 years old at time of accident. Some were injured at time of delivery. These young children are usually not expected to recover and will receive social rehabilitation assistance (especially personal support/attendant care) from ACC for the rest of their lives, which could be up to 70 to 80 years.

Assumptions required

Assumptions are needed for valuation, pricing and individual case estimation.

For the purpose of this paper, consideration of the assumptions for social rehabilitation will be limited to those for attendant care, housing modifications and vehicle purchase and modifications. Assumptions for residential support, education support and training for independence are important but will be left for another paper.

In addition, determining the level of inflation and superimposed inflation, if any, is a significant actuarial exercise and is not fully considered in this paper.

The main assumptions are:

- average amount of current payments (referred hereafter as simply "payment" per claim)
- future growth in payment per claim
- number of ultimate claims in an accident year
- discontinuance and mortality rates.

Future growth in payment per claim

The key assumption is the future growth in payment per claim.

The main factors affecting the future growth in payments per claim are:

- types of providers (mix of privately engaged providers or contracted providers)
- hours of care
- care rates
- the costs of housing modification
- vehicle purchase and modifications.

Mix of providers of personal care or attendant care

Home support services for ACC clients are purchased from contracted providers and privately engaged providers.

Privately engaged providers include:

- family members
- private carers
- agencies that do not have a contract with ACC (eg nannies, home help).

Under the current legislation, ACC clients may choose either an ACC contracted provider, or a privately engaged support worker or a combination of both to meet their assessed need.

Clients often prefer to use family members to provide personal support services such as helping them to shower.

There is anecdotal evidence in cases where family members are the care providers that it can be difficult to reduce the hours of care once the client's condition has improved. This is because for the family ACC payments may be the primary source of income for the family. Any reduction in the hours of care may result in a significant reduction in income for that family.

Some family members and clients also find it very intrusive having non-family carers in the home and so prefer to have their own family members provide the necessary care. Having their own family members provide care has the added advantage of retaining control over the provision and quality of the care provided.

Currently, contracted providers are paid about twice the rate payable to private providers. Contracted providers are paid at a higher hourly rate because their contract requires them to meet certain criteria. One of the criteria is that the contracted agencies are required to provide training and supervision to their employees.

From July 2008, the New Zealand Inland Revenue started to enforce the withholding tax law to privately engaged care providers - effectively resulting in a reduction in net income to these

private caregivers. The reduction in income and the additional administrative burden of processing the tax forms have prompted many private carers to switch to being employees of contracted agencies. The clients are receiving the same care often from the same carers, but given that ACC's rate to contracted agencies is higher than the rate to private care givers, ACC's spend on social rehabilitation has increased.

ACC is addressing this issue by proposing to narrow the gap between the rates payable to privately engaged carers and the amount contracted agencies directly pay their care givers. It is likely, once this change is implemented, the shift to contracted providers will reduce. It is also possible that there could be a reverse shift back to privately engaged carers. It is a challenge trying to predict clients' care arrangement.

Even without changes to the current arrangement, there could be changes to the mix of providers as clients go through various stages of their lives. In the early stages they are likely to be cared for by their immediate family. When they reach adulthood and move out of the family home, or when their carers age, care could be provided by a contracted agency.

The mix of providers has a huge impact on care costs as the current rate for contracted providers is about twice that paid to privately engaged care providers. For the year ending March 2009, the shift from private care providers to contracted providers has accounted for 60% of the overall 6.7% annual increase in cost.

As part of the actuarial exercise, the distribution of the types of carer must be estimated taking into consideration current knowledge and projected changes in the future. Qualitative information from case managers who deal with these clients on a regular basis may provide some useful insight into clients' preferred type of carers. Our Serious Injury Service is also collecting the age of the oldest parent where the client is living at home. Over time this will be used to assess the move to contracted care due to ageing of family carers.

Investigations into correlations between type of carers and any of the ethnicity, age, location and serious injury profiles may provide valuable information in assisting in final assumptions setting.

Hours of care

It is anticipated that the hours of care a client receives will not be static. As a client goes through the different stages of life, from childhood to adulthood, leaving the family home, or starting a family, the number of care hours is likely to change. It will also vary when the health of the client changes.

ACC has identified cases that have either been over-serviced or under-serviced in terms of hours of care provided. An example is where ACC pays family members, especially parents, for what would be considered normal activities, eg 24 hour care of a serious injury baby that would require care anyway. Also, ACC pays family members to sleep in their own homes because the clients may need someone to be around in case of an emergency, eg house fire.

ACC is adopting the MAA Lifetime Care and Support Attendant Care Guidelines for Spinal Cord Injuries, as a benchmarking tool for the attendant care hours provided to spinal cord injury clients. In addition, ACC has built a statistical model (courtesy of data provided by TAC) using the Functional Independence Measure (FIM^{TM}) to predict the hours of care that we believe are appropriate. The purpose of the model is to identify outliers. (It is ACC's intention to re-calibrate the model when enough data has been collected). On an ongoing basis, ACC will be reviewing the hours of care provided to our clients to bring these hours to a level that is consistent with that projected by the FIM^{TM} model where appropriate. This will be taken into consideration when projecting the future hours of care.

ACC has also implemented some new initiatives with the goal of increasing clients' independence and self-reliance, and reducing their dependency on ACC-funded support such as attendant care. Examples of initiatives are:

- Assistance Dogs – to replace the need for a care provider for some clients. Assistance dogs can perform certain tasks (eg sorting out laundry, putting and taking out washing from the washing machine and dryer, opening doors, turning on TVs etc) that the clients cannot do. Assistance dogs have a one-off cost of $25,000 and have a working life of eight years.
- Supported Living – to help clients become more independent around their home and in their community, with a focus on re-learning or developing skills such as cooking, managing money, using public transport. This will eventually reduce the hours of care the client needs.
- Supported Employment – this service aims to provide paid employment for the clients and possibly on-going support towards permanent employment.
- School to Work Transition – this service aims to help young people with a serious injury make the transition from secondary school into further study or employment.

We anticipate a positive impact from these new initiatives, but no changes to estimates will be made until results are demonstrated in the monitoring of the initiatives. Appropriate allowance for these initiatives will then be made for future cases targeted for the above initiatives.

Care rates

To properly allow for future growth in the average payments, ACC need to look at the factors that will affect the growth in the care rates payable to providers.

Within the contracted home support market, ACC is a minority purchaser of home support services, purchasing 10% to 15% of the total market. Therefore ACC is currently a "price taker" and has little control over the price. It is very difficult to predict the future care rates as they will be affected by supply and demand as well as the ageing of care providers.

As a basis for predicting future rate increases, historical rate increases have been analysed. Over the long term, the contracted care rates are predicted to approach 80% of the average hourly rates in New Zealand.

ACC will also be reaching out to other relevant departments (eg NZ Ministry of Health) for a more thorough understanding of their pricing policies to help predict future rate increases for contracted providers.

It is very difficult to predict how the privately engaged care rates will increase. Historically the growth in privately engaged care rates is less than the growth in contracted rates. Actuarial will be considering whether it is more appropriate to assume that the slower growth in private care rates will continue, or to assume the same growth rates for both contracted and privately engaged care.

If the slower growth in privately engaged care rates is assumed to continue, the gap between contracted rates and privately engaged care rates will widen. Consequently, privately engaged carers would be further encouraged to switch to being employed by contracted agencies, as was the case when the withholding tax deduction was enforced. In this scenario, there must also be an assumption as to how the mix of providers will be affected. An alternative and preferred assumption is to assume that privately engaged care rates will increase at the same growth rate as the contracted rates.

Housing modification

The purpose of housing modifications is to assist a client live as independently as practicable, given the limitation imposed by their injury and the space in which they live.

There are two types of housing modifications: structural and non structural.

Examples of structural housing modification include:

- widening of doorways, erecting a permanent external ramp
- adding a wet area shower
- expanding or adding a new room
- adding or removing walls
- kitchen modifications to suit a wheelchair user- including alterations to bench height and creating wheelchair-accessible facilities
- covered transfer area
- garaging.

Examples of non structural modifications include:

- adding temporary external or internal ramping
- adding simple railings or hand holds
- providing step entry into a shower box
- installation of heat pumps.

To project future costs in housing modifications the following are considered:

- The costs of the modifications are dependent on labour and material costs. During the housing boom ACC had to pay higher costs for labour and materials. But the recent recession may have reversed the trend. As the economy recovers, it is likely the costs of material and labour may increase again. Thus the construction cycle will be taken into account.
- In cases where there is a delay in the completion of housing modifications, ACC has to find alternative accommodation, which is an additional cost.
- If the clients' injury-related needs or circumstances change, it is possible that a further housing modification is required as they move to another house.

Housing modifications are usually approved in advance. Actuarial receives an updated list of housing modification approvals so that appropriate allowance can be made for future projections over the short term. For longer term projections, the current trend is used in changing housing requirements from the population data as well as the experience of the serious injury clients, allowing for inflation of labour and material costs in the building and construction sectors.

Vehicle purchase and modification

Transport for Independence is a key aspect of social rehabilitation and aims to restore the clients' independence by enabling them to safely access transport and be mobile. To achieve this objective, ACC may be required to purchase and/or modify a suitable vehicle for the client. For example, ACC provides highly modified vehicles to allow clients with high level spinal cord injuries to self-drive. ACC either imports the vehicles or purchases from local suppliers. ACC acquires about 100 to 150 vehicles each year.

In projecting the future costs of vehicle purchases, ACC considers the following:

- appropriate allowances can be made for future projections of vehicle purchases as they are pre-approved
- on average, vehicles have a replacement cycle of about 12 years.

- future indexation of vehicle costs, taking into account the general trend in exchange rate fluctuations.

Sometimes it is necessary to modify the vehicle to assist in the client's independence. Vehicle modification means adding or removing features of a vehicle so the client can:

- gain access to the vehicle and have freedom and safety of movement while in it
- safely drive or operate the vehicle
- travel safely as a passenger, and
- transport essential mobility equipment.

Examples of vehicle modifications include:

- adding hand-controls
- wheel spinners
- modified seating
- chair lifts.

The costs of the modifications depend on whether the client is driving the vehicle or if he/she is travelling as a passenger.

Number of ultimate claims

Following a re-profiling of serious injury cases, some previously non-serious injury claims are now classified as serious injury. Although the exercise was expected to be completed by late 2008, claims are still being "discovered" that should have been classified as serious injury. As a result, it is difficult to know with certainty the number of serious injury claims that ACC has currently.

The definition of serious injury is under review and may be included in future regulations (currently not defined in legislation or regulations). This again increases the uncertainty of the number of future claims classified as serious injury. Actuarial will work closely with the Serious Injury Service to determine the likely impact on the number of serious injury claims when the definition changes.

The majority of the serious injury claims are the result of motor vehicle accidents. As the safety features in motor vehicles increase, the number of fatal motor vehicle crashes has decreased; but the number of serious injury cases has increased as a result. It is possible that future improvements in the safety features will further affect the number of serious injury claims from motor vehicle accidents.

Injury prevention in areas other than road safety can also affect the number of serious injury cases. Actuarial will study the trend in the number of ACC's serious injury cases and adjust projections accordingly. To further understand the impact of injury prevention on the number of claims, environmental scanning may be of assistance by looking at the relationship between the trend in the common measures of road safety and level of motor vehicle serious injuries.

Mortality and discontinuance

Claims can stop either through recovery or death. The more seriously injured clients are unlikely to recover but with the advancement of medicine, many can be expected to live a "normal" lifespan. A "normal lifespan" for a seriously injured person is very dependent, not only on the type and severity of injury, but also on any pre-existing health issues and possibly the extent of support and family care. It is therefore difficult to predict the life expectancy of these clients and consequently the length of time they require support.

To date, there are only about 5,000 serious injury claims and there were about 500 deaths distributed across all age groups and serious injury profiles. Hence there is not enough data to determine the appropriate mortality loadings for every age-group and serious injury profile.

To add to the complexity of the issue, mortality rates do vary by socio-economic groups and/or ethnicity. Mortality rates by ethnicity are available on the NZ Dept of Statistics website. But multi-ethnicity makes it hard to determine which ethnicity a client belongs to. Until ACC has more data, ACC will use the general population mortality, undifferentiated by ethnicity.

Clients whose injuries are less serious can be expected to eventually recover. With the help of case managers, Actuarial should be able to identify clients who are likely to recover and will no longer need ACC's social rehabilitation support.

Summary

There are many factors to consider when projecting future serious injury claims' costs. Many of these are hard to predict with certainty, especially given the long duration of many of these claims. The case study below recaps and highlights the factors that need to be considered for future cost projections.

Case study

- Male, 17 years, Maori, currently living with his parents in rural Waikato.
- Injured two years ago in a single vehicle crash, driving home after work (exhaustion may have been a contributing factor, alcohol was not). He was employed as a fencing contractor at the time of his accident.
- **Injuries as a result of the crash**: multiple fractures to the right lower leg, severe bruising and lacerations to face and arms, mild concussion, high-level tetraplegia
- **Functional impairments**: total paralysis of trunk and lower extremities, moderate movement in elbow, forearm and wrist; can move head and neck with moderate shoulder control. Respiratory muscle function impaired and respiratory capacity and endurance compromised.
- **Current ACC-funded services and supports:** includes equipment, medical consumables and meditations, modifications to the parents' house, personal support (attendant care), transport, and income replacement.
    - **Equipment:** manual chair, tilt and space power chair, wheelchair cushions and seating system, portable access ramps, adjustable bed and pressure management mattress, standing frame, shower chair, hoist for bed, commode, hand splints, general equipment to cover activities of daily livings such as cutlery
    - **Modifications to parents' home:** ramps for access and emergency egress, widened doorways, extension to bedroom to allow for power chair and hoist, wet area bathroom, heat pump for temperature control, new storage area for equipment, accessible features in kitchen, smoke alarm.
    - **Personal support:** 0.5 hour per week of nursing care from a community nurse for health status monitoring and to oversee bowel management programme; six hours per day attendant care from mum for assistance with personal hygiene and other activities of daily living. Mum is expected to provide indirect care and sleepover unpaid as part of reasonable family responsibility. In the case where mum is unavailable, ACC will need to pay contracted agency to provide this care.
    - **Transport:** mobility taxis three times per week to visit hydrotherapy pool at local aquatic centre and access the community.

Uncertainty in estimating the cost of providing social rehabilitation to this client:

- Currently his mum is providing his care, payable at the family rate. But he may want to move out of his parents' home and start living independently (alone or with others). Will he need care from a contracted agency? How many hours of care will he need in the future?
- It is likely that he may undertake study or re-training – instead of attendant care, he may need support for training and for employment if he is employed. His attendant care hours will change, but how many hours will he need?
- He may want to start a family. How does this affect his hours of attendant care, his provider of care?
- If he were to start a family, own his own home, then this will require further housing modification. It is very difficult to predict when that will happen, and how much the housing modification is going to cost ACC.
- He may also need a suitably modified vehicle. How much the vehicle and its modification will cost will depend also on the exchange rate and labour cost at the time of purchase.
- He will require replacements for much of his equipment in about five to ten years time. Since ACC imports some of this equipment, the costs would then be subject to fluctuation in exchange rates. Medical equipment is also subject to different inflation rates. All of these are difficult to predict, especially since ACC does not know when the replacement will occur.
- In each stage of this client's life, a re-assessment and adjustment to his injury-related support and services will be needed. The high degree of uncertainty in the timing and severity of future changes makes actuarial projection of future costs most challenging indeed.

Vocational Rehabilitation

The main purpose of providing vocational rehabilitation services is to restore the client's independence in the context of their employment situation and therefore reduce the time an injured worker remains on weekly compensation. A client may be eligible for vocational rehabilitation services if they are currently receiving weekly compensation payments or would require weekly compensation without the provision of vocational rehabilitation services. This includes clients injured while unemployed or as children who maybe receiving compensation for loss of potential earnings.

Figure 4 outlines the three work streams of vocational rehabilitation provided by ACC:

1. Maintain employment
2. Obtain employment
3. Regain or acquire vocational independence.

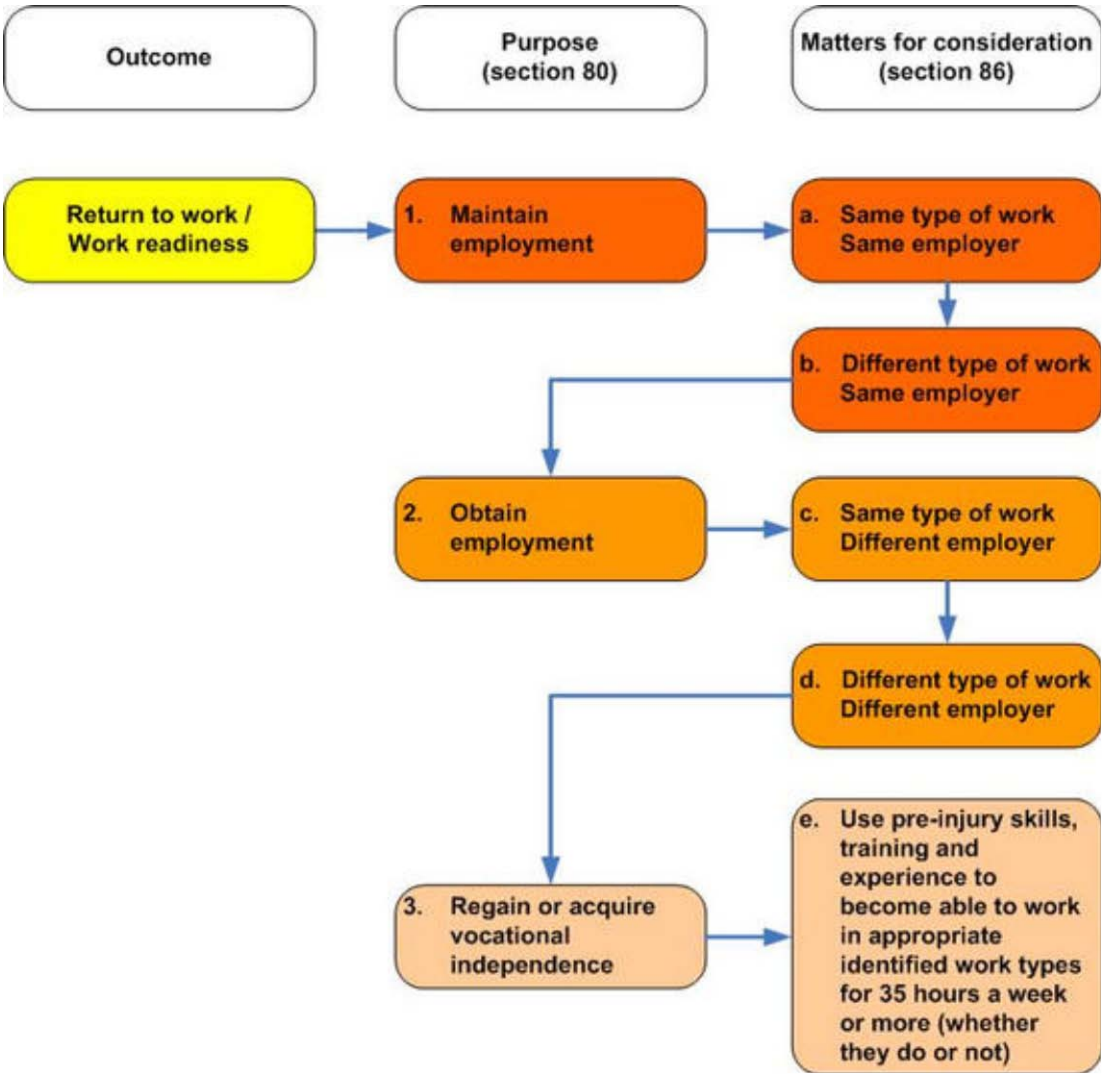

Figure 4: Vocational Rehabilitation Work Streams

When employment cannot be maintained or obtained, the desired outcome of vocational rehabilitation is for the client to be work-ready or have achieved "vocational independence". Vocational independence is determined by way of a process which requires the following steps to be undertaken:

- an initial occupational assessment to document pre injury skills, employment history and the type of jobs a person could undertake having considered their previous employment history. This is followed by an initial medical assessment to determine which of the employment options identified is medically sustainable taking into account injury related restrictions
- a period of rehabilitation to ensure the injured person is capable of meeting the employment options identified considering any accident related restrictions
- a further occupational and medical assessment to confirm that all required rehabilitation has been completed and that the person could undertake the employment options identified. If work-readiness is determined to a level of at least 35 hours per week, entitlement to weekly compensation will cease.

In the same vein of the Actuarial Control Cycle there is a "Core Rehabilitation Process" adopted by ACC operational staff that involves regular monitoring to progress through the rehabilitation stages. The process continues in a cycle until the desired outcome has been achieved. Figure 5 shows this cycle.

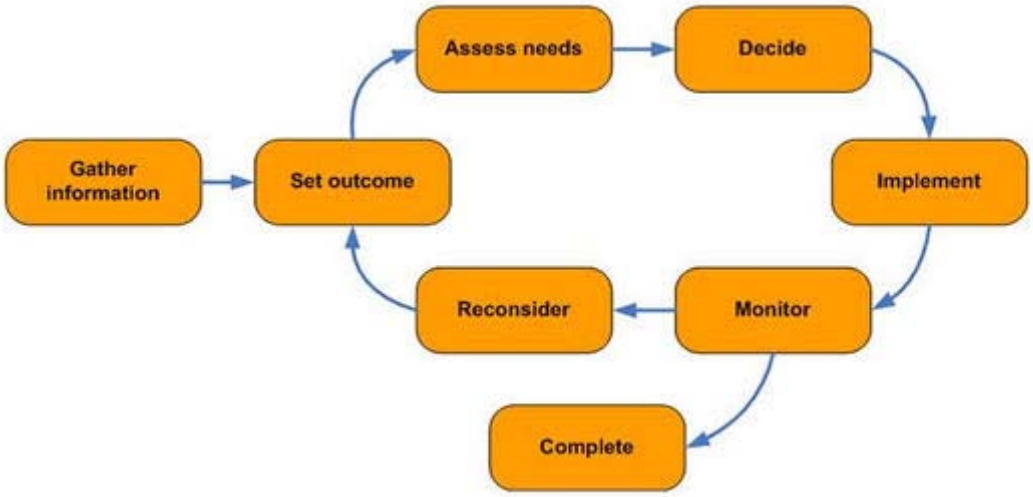

Figure 5: Core Rehabilitation Process

A major issue faced when projecting future claim numbers and payments comes from the changes in legislation and operational processes over the history of the Scheme. These changes make analysing historical data problematic and the first requirement in any actuarial analysis involves mapping these changes. Also required is consideration of any future changes in the operational provision of these services. While potential future legislative changes cannot be included in outstanding claim liabilities or levy rates until they are passed into legislation, it is also worth considering the effects these may have on costs.

As can be seen in Table 1, the contribution made to ACC's total liability from vocational rehabilitation services is small and, as yet, ACC has not provided a large amount of actuarial analysis on this service. We will be increasing focus on this in the near future, particularly on the interaction with weekly compensation durations.

Legislation history

Section 80 of the Injury Prevention, Rehabilitation, and Compensation Act 2001 (IPRC Act 2001) provides that the purpose of vocational rehabilitation is to help clients maintain employment, obtain employment or regain or acquire vocational independence. Vocational rehabilitation includes the provision of activities or equipment that assist in the maintaining or obtaining of employment.

Vocational rehabilitation provisions also require that vocational rehabilitation assistance is:

- cost effective in achieving vocational independence for the minimum period necessary to achieve its purpose (originally capped at three years).
- likely to reduce the costs of entitlements.

The IPRC Act 2001 came into force on 1 April 2002 and introduced the requirement that comprehensive vocational rehabilitation is required before a client is referred for a vocational independence assessment. Comprehensive vocational rehabilitation includes the provision of an initial occupation assessment (IOA) and an initial medical assessment (IMA) under the Act. The result is an increase in the frequency and therefore costs and liability of these assessments.

2008 amendments to the IPRC Act – the 2008 amendment contained three components directly related to the provision of vocational rehabilitation services:

- the requirement to include pre-injury earnings in the factors that must be taken into account in an initial occupational assessment (IOA) and a vocational independent occupational assessment (VIOA)
- the ability for ACC, at its discretion, to provide vocational rehabilitation for longer than three years
- the requirement that eligibility for vocational rehabilitation is not to be affected by loss of entitlement to weekly compensation, if the reason for that loss of entitlement is that the client has reached or is over the New Zealand Superannuation Qualifying Age (NZSQA).

Impacts of historical changes

Changes in the legislation requiring a more comprehensive approach to vocational rehabilitation and an increased focus on return to work outcomes from 2005 resulted in an increase in the number of clients receiving vocational assessments. In addition, at that time there was a shift toward paying vocational rehabilitation service providers for the number of services provided, with a reduced emphasis on outcomes. The size and immaturity of the vocational rehabilitation practitioner marketplace in New Zealand resulted in the use of different vendors for different services.

Current Operational Process

The current vocational rehabilitation process has the following steps:

- gather information, set outcome expectations assess current and future needs
- arrange for a workplace assessment
- review workplace assessment
- arrange graduated return to work programme (GRTW) – alternative duties available
- arrange employment maintenance programme (EMP) – no alternative duties available, fit for selected work
- receive report and monitor
- determine if client has returned to pre-injury employment
- arrange initial occupational assessment (IOA)
- receive initial occupational assessment report
- arrange functional capacity evaluation
- arrange initial medical assessment (IMA)
- decide if client fit to return to identified work
- arrange work preparation programme
- arrange work ready programme
- review report
- review support required.

The final step in the vocational rehabilitation process is the vocational independent occupational assessment (VIOA) as defined under s107 of the IPRC Act:

> *The purpose of the assessment is to ensure that comprehensive vocational rehabilitation, as identified in a claimant's individual rehabilitation plan, has been completed and that it has focused on the claimant's needs, and addressed any injury-related barriers, to enable the claimant—*
> *(a) to maintain or obtain employment; or*
> *(b) to regain or acquire vocational independence.*

The outcome of successful vocational rehabilitation and a return to either permanent employment or vocational independence is stated under s112 of the IPRC Act:

> *If the Corporation determines under section 107 that a claimant has vocational independence, the claimant loses his or her entitlement to weekly compensation 3 months after the date on which he or she is notified of the determination.*

Recent and proposed future changes in providing vocational rehabilitation

At a high level, the provision of vocational rehabilitation can be categorised into two streams: maintain employment and obtain employment. The requirements are different for each category, but the overall goal is always to return clients to vocational independence and ultimately, full-time employment.

In conjunction with a new service delivery model for the delivery of case management services that has been implemented from 1 July 2009, changes to the provision and management of vocational rehabilitation services are being rolled out under a revised purchasing model.

Previously, services were purchased from vendors as individual outputs (reports, assessments, etc). Under the new model, emphasis is on engaging all parties to the process to ensure a coordinated approach and the focus is on return to work for the client. The ultimate goal is for a seamless, integrated holistic service that is paid on an outcome basis rather than a service provided basis.

The new service delivery model is still in its infancy with the first two stages of Triage and Stay at Work.

Under the ***Triage*** process, Triage Managers are responsible for completing a triage screening assessment for all new claims which meet a specified set of criteria. This will ensure that any risk factors are identified early and that the claim is managed appropriately for its level of complexity.

The objective is to identify clients who may be either:

- at risk of a long duration of weekly compensation, or complexity in return to work, particularly if their pre-injury employment is at risk
- certified for time off work due to sprains and strains, where this may be unnecessary if support could be arranged for them to recover at work.

Stay at Work replaced the Graduated Return to Work service model from 1 July 2009. The Stay at Work service model falls under the “maintain employment” category and is provided for both low and high complexity client groups. It is designed as an early intervention service that enables a client to return to an engaged and productive life and safely recover from injury while participating in employment to the fullest extent possible.

As part of the Stay at Work service model, workplace assessments are performed only as clinically necessary and at the same time that a service is provided. Under the previous Graduated Return to Work model, a workplace assessment was required for a client to enter the service. Potentially, this change could significantly reduce the number of workplace assessments provided.

ACC is currently trialling an "obtain employment" service in the South Island of New Zealand. The focus of this service is to achieve the outcome of full-time permanent work for clients who have lost their pre-injury employment. The key to this service model is the provision of a flexible service targeted to the client's identified needs where one vendor provides the complete rehabilitation service to the client. This can include functional rehabilitation and the holistic service will enable the vendor to provide the client with a programme relevant to their situation. Vendors are paid using an outcome focused model with payment weighted for the outcome of permanent employment

A barrier to the provision of this service is the availability of suitable vendors as the New Zealand vocational rehabilitation market is not yet at this level and development of the market is projected to be an indirect outcome of implementing this service.

The Recover Independence Service (RIS) teams, which manage ACC clients with more than 2½ years of weekly compensation paid, will be trialling the use of job subsidies. The job subsidies will be used to assist employers to offer employment to clients who have been absent from the workforce for a considerable period of time.

The rate of the subsidy will be capped at a maximum of $380 per week, which aligns to what is offered by the Ministry of Social Development (MSD) for unemployed job seekers. The subsidy will be offered for permanent employment only and will be set at no more than 50 percent of the weekly wage paid to the client.

The subsidy will be utilised when other legislative options have not been able to secure a client's return to independence. Subsidies will be offered alongside other support used to assist employers in employing an ACC client, such as an initial short unpaid work trial and assistance with adapting workplace equipment.

The job subsidy trial will commence with a small number of employers being contacted to participate in November 2009.

How are the recent and proposed operational changes going to present in the actuarial results? Will there be initial increases in costs? Will the new programmes translate to reduction in weekly compensation duration and liability? How much of this should be taken into account when projecting future accident years?

As with anything, the expectation from the business of positive results is high, but how can actuarial science be used to realistically include these expectations in projections?

The most important aspect of the effects of historical and proposed changes on liabilities involves communicating the variability around outcomes to the business. Scenario and sensitivity testing of assumptions and possible outcomes can go some way to indicate the variability, but is this enough?

Case Study in Analysing Historical Vocational Rehabilitation Data

To illustrate some of the analysis that can be applied to historical payment information, we will go through a short case study of the initial data investigation. In this way we can better illustrate some of the questions that can arise and make some suggestions for further analysis.

Claim frequency

As vocational rehabilitation is provided to clients receiving weekly compensation, it makes sense to compare the number of clients receiving weekly compensation to those receiving vocational rehabilitation.

Figure 6 shows the increase in the proportion of weekly compensations claims receiving vocational rehabilitation payments by accident year. Accident year corresponds with ACC's levy year for the Work and Earners' Accounts which run from 1 April to 31 March. From this it appears that there has been an increase in the provision of vocational rehabilitation services to weekly compensation claims and the obvious questions to ask on seeing this are:

- How has this affected the total vocational rehabilitation spend?
- Is this increase likely to continue in the future and should it be built into projections for future accident years and outstanding liabilities?
- What is the outcome of this increased provision of vocational rehabilitation services – has there been a corresponding decrease in duration and cost of weekly compensation claims?

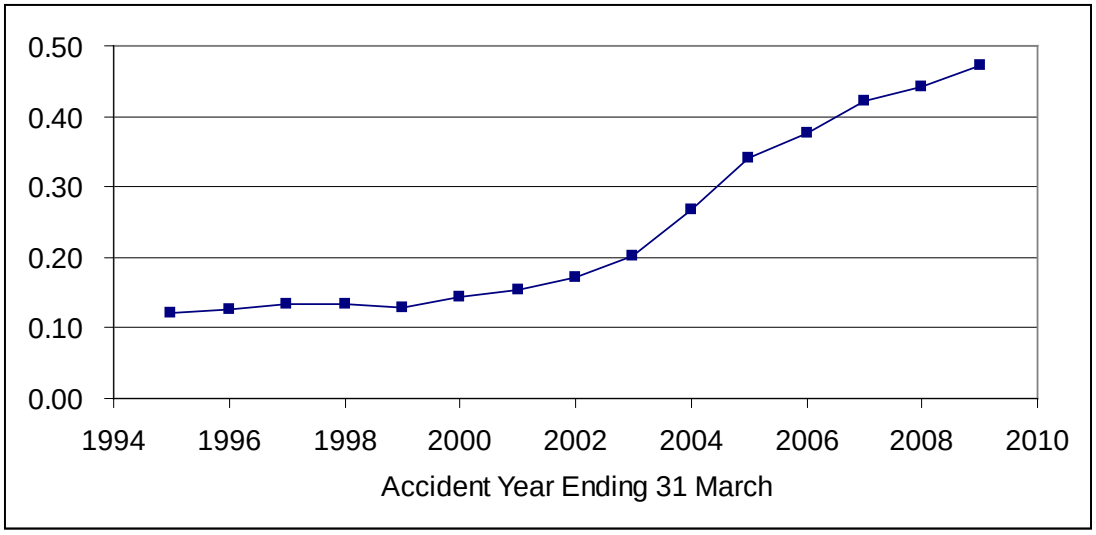

Figure 6: Proportion of Workers Weekly Compensation Claims Receiving Vocational Rehabilitation

The first question can be partly answered by looking at the amount of vocational rehabilitation spent on each claim.

Claim severity

The average amount of vocational rehabilitation paid per claim is shown in Figure 7 which highlights a decrease for the 2004 and 2005 accident years, followed by an increasing trend from 2006 onward.

The decrease in 2003 could be attributed to an increase in the number of assessments provided in response to the legislation requiring both an initial occupational assessment (IOA) and an initial medical assessment (IMA) as part of the provision of "comprehensive vocational rehabilitation". But this does not explain the increase from 2007 onwards.

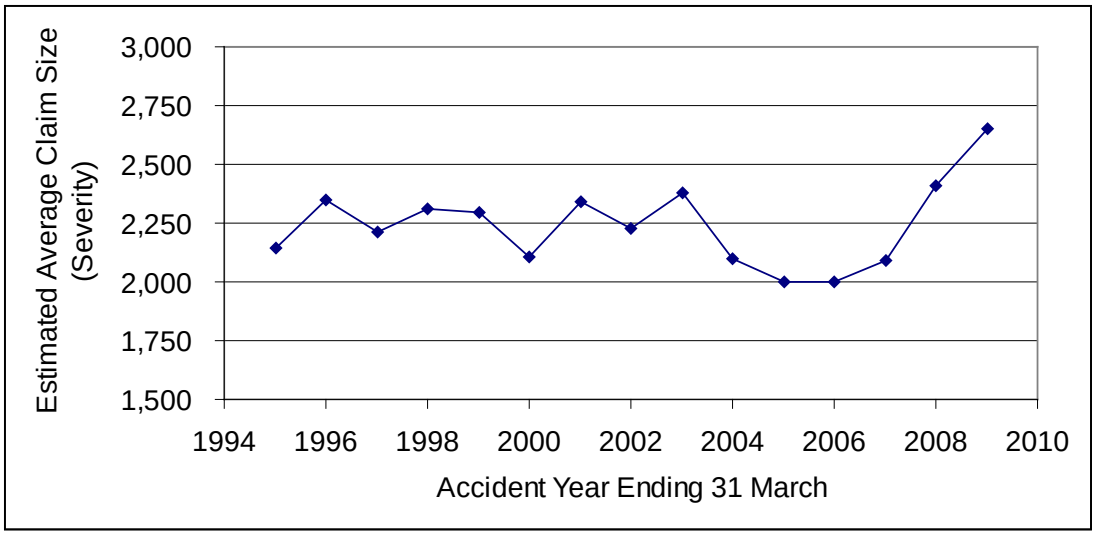

Figure 7: Estimated Average Vocational Rehabilitation Claim Size per Claim receiving VR Services

Interaction with Weekly Compensation

The successful provision of vocational rehabilitation services would be expected to have little effect on the frequency of weekly compensation claims, but a decreasing effect on the duration of these claims which should be reflected in the average claim size. The impact of the provision of increased vocational rehabilitation on the weekly compensation liability is difficult to isolate from other factors influencing the amount of weekly compensation provided, but an initial look at the average weekly compensation claim size has shown an increasing trend since 2002, as can be seen in Figure 8.

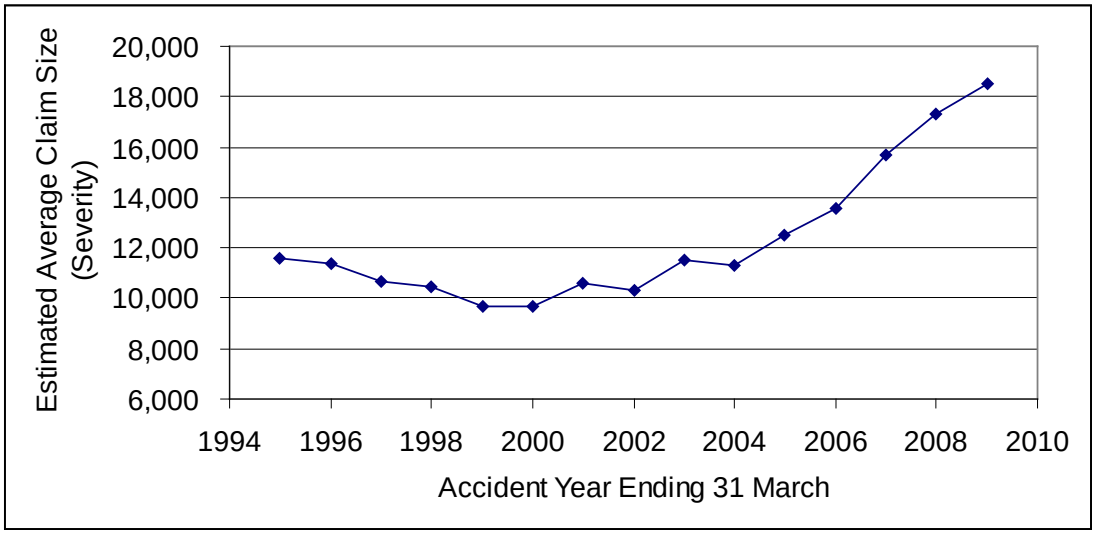

Figure 8: Estimated Average Weekly Compensation Claim Size

The question of how future trends should be projected is at the heart of actuarial science and cannot be answered by examining historical trends alone. It is important to understand the causes of the historical trends, whether it is legislation changes, operational changes, environmental changes or a combination, in order to decide what impact future proposed changes might have. Further analysis could be undertaken to bring all accident years to the same level in terms of legislation and operational changes.

Analysis by payment year

It is also important to examine the data from different views: the graphs shown in this case study so far are all on an accident year basis – what happens if history is examined on a payment year basis? Figure 9 shows the average paid vocational rehabilitation per claim by payment year ending 30 June, which shows a slightly different trend to that shown in the accident year analysis.

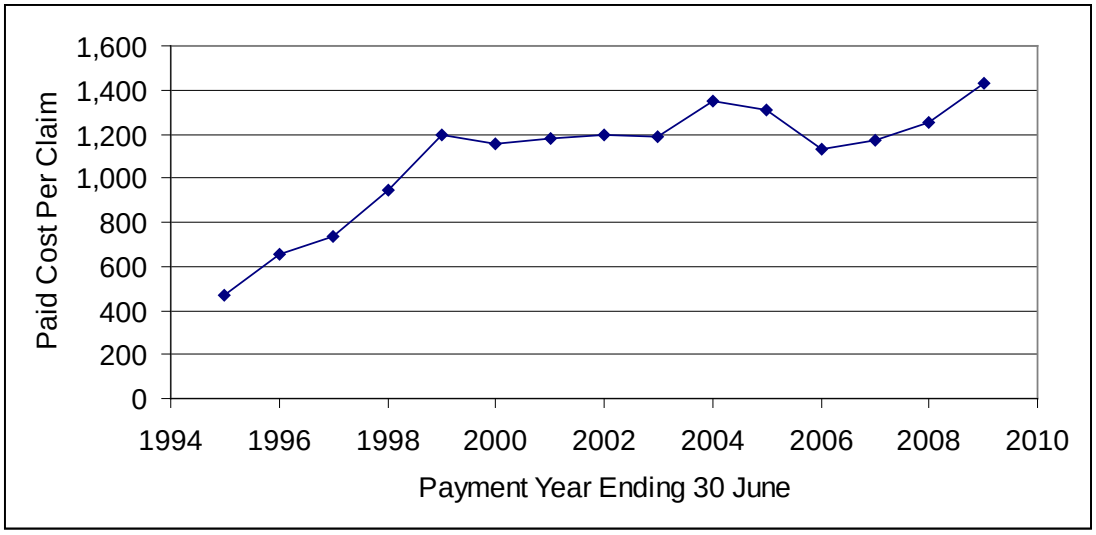

Figure 9: Average Paid Vocational Rehabilitation Per Claim By Payment Year

This may indicate an increased emphasis on vocational rehabilitation provisions for older claims from 1999 or it may indicate inflation in the amounts paid for vocational rehabilitation services. Further investigation into these differences between accident year and payment year trends is indicated.

The increasing trend in the proportion of weekly compensation claims receiving vocational rehabilitation services does not alter when viewed on a payment year basis, as can be seen from Figure 10.

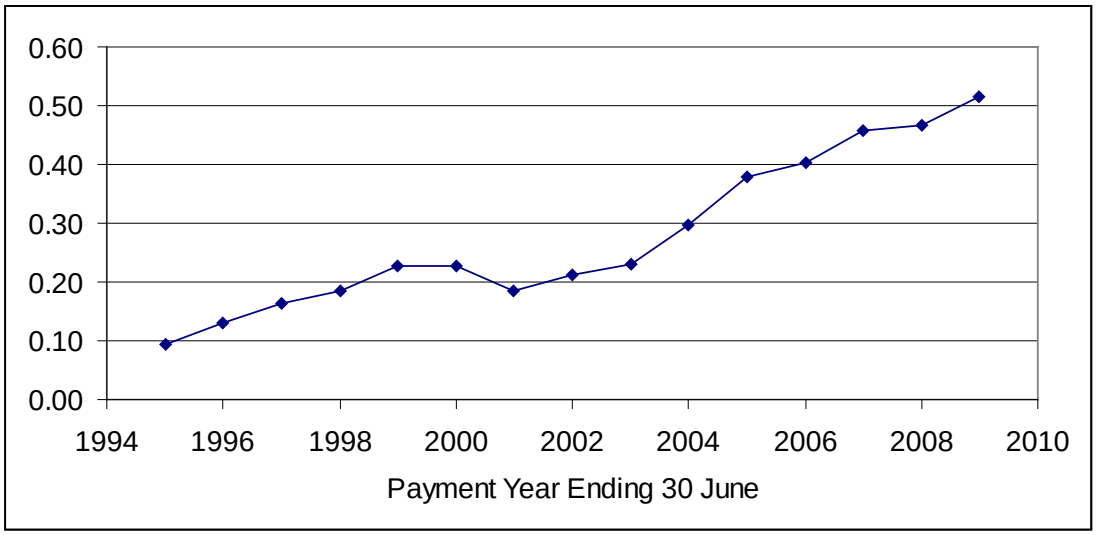

Figure 10: Proportion of Paid Weekly Compensation Claims Receiving Vocational Rehabilitation by Payment Year

Further breakdown of this proportion into duration of weekly compensation could uncover more information, as it is likely that claims on weekly compensation for short periods of time only will not require vocational rehabilitation.

Conclusion

Estimating liabilities for rehabilitation services to ACC's clients is a complex process and is subject to uncertainties due to the long term nature of many claims, as well as operational and legislative changes which will inevitably occur over time. With the fast changing environment, past experience may not necessarily be a good guide in setting assumptions, considerations need to taken of likely future changes and their impact on future costs.

References and Acknowledgements

Noeline Woof, Paul Rhodes and Darryl Frank, 31 August 2009, *Accident Compensation Corporation: Valuation of Outstanding Claims Liabilities as at 30 June 2009,* PricewaterhouseCoopers

Data from Transport Accident Commission, Victoria, in building the FIM model

ACC's internal teams, including:

- National Serious Injury Service
- Treatment and Rehabilitation Service
- Actuarial Services
- ACC Insurance Business Management
- Health Purchasing and Provider Relationships
- Operations.

[i] Comparable injuries include burns, multiple amputations and blindness.