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An analysis of ACC data for the New Zealand Timber Processing Industry

Liz Ashby and David Tappin

Summary

- A descriptive epidemiological analysis was undertaken of all accepted ACC claims for timber processing industries, for the two-year period, 1st January 2005 – 31st December 2006. Over 11,000 claims were analysed.
- Around 43% of all claims were musculoskeletal disorders (73% of the soft tissue injuries were musculoskeletal disorders injury types).
- Lacerations/puncture/sting were the next highest injury type, accounting for 22% of all claims, with contusions 11% and foreign bodies just over 8%.
- 73% of claims were for Medical Treatment, 18% were Entitlement claims. The remaining 9% were 'other' or unknown.
- 78% of the Medical Treatment claims were soft tissue injuries or lacerations, compared to 59% of Entitlement claims: industrial deafness (13%) and fracture/dislocations (10%) were more prominent injury types among the Entitlement claims.
- Claims within the Log Sawmilling sector, including Timber Resawing and Dressing, accounted for 48% of the total. 71% of these were for Medical Treatment and around 19% of these were Entitlement claims.
- Wood Product Manufacturing nec and Wooden Structural Component Manufacturing accounted for a further 18% and 16% of all claims respectively.
- Incident rates, based on all claims for 2006, were 211 claims per FTE for the timber processing industry as a whole, and 412 for log sawmilling.
- Further study is required to further identify the presence of key risk factors by sector, injury causation factors, which tasks / work areas are most commonly involved, and determine potential primary interventions with the industry.

Contents

Page

1. Introduction 1
2. Method 1
3. Results
   - 3.1 Registration date 2
   - 3.2 Demographics 2
   - *Gender*
   - *Ethnicity*
   - *Age*
   - 3.3 Claim type and costs 4
   - 3.4 Injuries 5
   - *Injury types*
   - *Injury sites*
   - 3.5 Industry sector 7
   - *Log sawmilling*
   - *Wood Product Manufacturing nec*
   - *Wooden Structural Component Manufacturing*
   - 3.6 Accreditation 8
   - 3.7 Accident Description Analysis 9
   - 3.8 Incident rates 10
4. Conclusions 12

Appendix 13

1. Introduction

As part of a wider study addressing injuries in the timber processing industries, a descriptive epidemiological analysis was undertaken of ACC claims for timber processing industries, for the two-year period, 1st January 2005 – 31st December 2006. ACC provided a dataset of 12,133 claims for this period. No information about the claimant was included in the dataset. The data were then cleaned, removing cases that were not from the timber processing industry, leaving a usable dataset of 11,124 timber processing industry cases.

Quantitative analysis methods were simple frequency distributions and cross-tabulations. The data were analysed using Excel. A brief initial content analysis of the narrative text was conducted, to search for a selection of key event variables.

2. Method

The claims data was taken from ANZIC Industry codes: C23 [ANZSIC 1996], C14 & 15 [ANZSIC 2006] and was cleaned using the following steps:

- Data was sorted by Registration Date – to remove claims outside the two year period
- Data was sorted by Industry Classification – to remove claims outside the required industry codes.

The data was analysed using the following steps:

- The claims were analysed, combining the data from both years, considering Year, Age, Gender, Minor Diagnosis, Ethnicity, Injury Site, Region, Med Fee or Entitlement, Classification Unit, Accreditation, Accident Description.
- READ codes were reviewed to provide more detail on diagnosis.
- Simple content analysis of accident descriptions was conducted using key words within the top three represented industry sectors.
- Injury incidence rates were determined using Statistics New Zealand data.
- Inter-rater reliability checks were conducted.

3. Results

3.1 Registration date

Following the cleaning process, a total of 11,124 claims remained. Claims were spread relatively evenly across the months and years (51% from 2005 and 49% from 2006), apart from fewer claims in January of both years (Figure 1). The percentage of claims for each month was similar across the industry sectors.

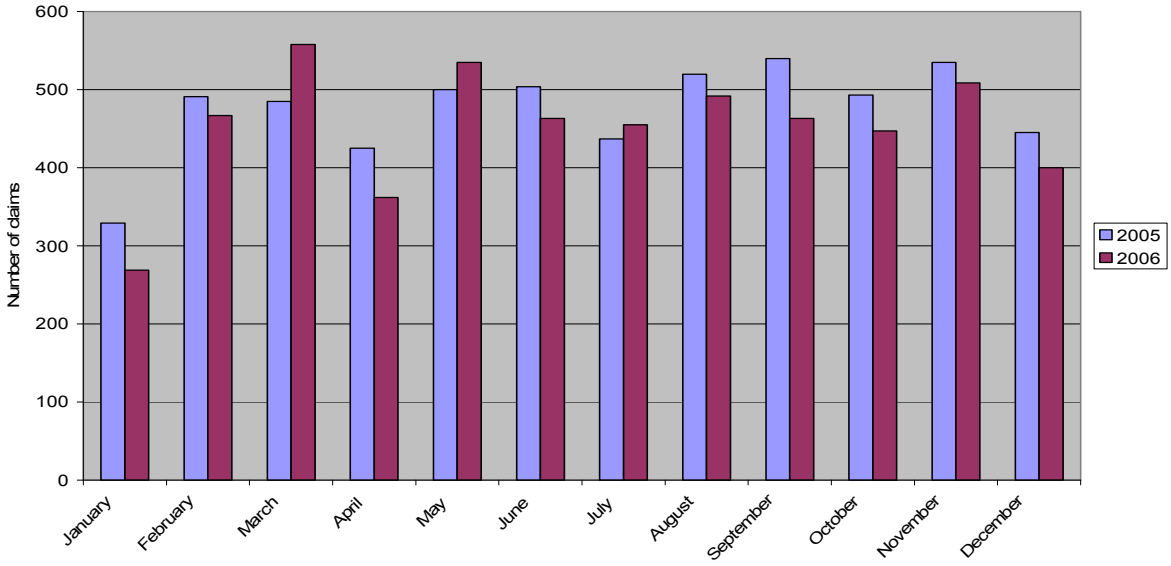

Figure 1. Claims data by Year and Month

3.2 Demographics

Gender

Of the 11124 claims, 90% were male and 10% female: males account for 74% of claims across all industries (ACC 2005 figures). Female injury claims were largely between 30 and 49 year age group (60%); claims from males were more evenly spread across age groups. Table 1 and Figure 2 show total claims by age and gender.

Ethnicity

New Zealand European and Maori were the two largest ethnic groups, representing 60% and 23% of the claims respectively, with Pacific Peoples representing 7%. Across all industries, Europeans account for 70%, Maori 13% and Pacific Peoples 5% (ACC 2005 figures). Well over a third of each of the two main ethnic groups (38% and 43% respectively) were for claims within the sawmilling sector, reflecting a similar proportion of the claims from all ethnic groups (43%) in this sector. Around 18% of claims for Maori were from Wood Product Manufacturing nec, similar to the proportion of Paheka/European (18%) and Pacific Island peoples (21%).

Age

The age of claimants was categorised into five year groups. Claims were fairly evenly represented between ages 19 and 49 years, with fewer claims from age 50 onwards (Table 1 and Figure 1) although male claimants peaked in the 20-24 age group. Without accompanying data on employment numbers by age and gender however, it is impossible to establish actual incidence rates.

Table 1: Claims by age of claimants

Age (years)	No. of claims (n=11124)	% of total claims
5 – 19	1150	10
20 – 24	1503	13
25 – 29	1194	11
30 – 34	1293	12
35 – 39	1292	12
40 – 44	1346	12
45 – 49	1152	10
50 – 54	836	7
55 – 59	651	6
60 – 64	396	4
65 +	306	3
unknown	5	0

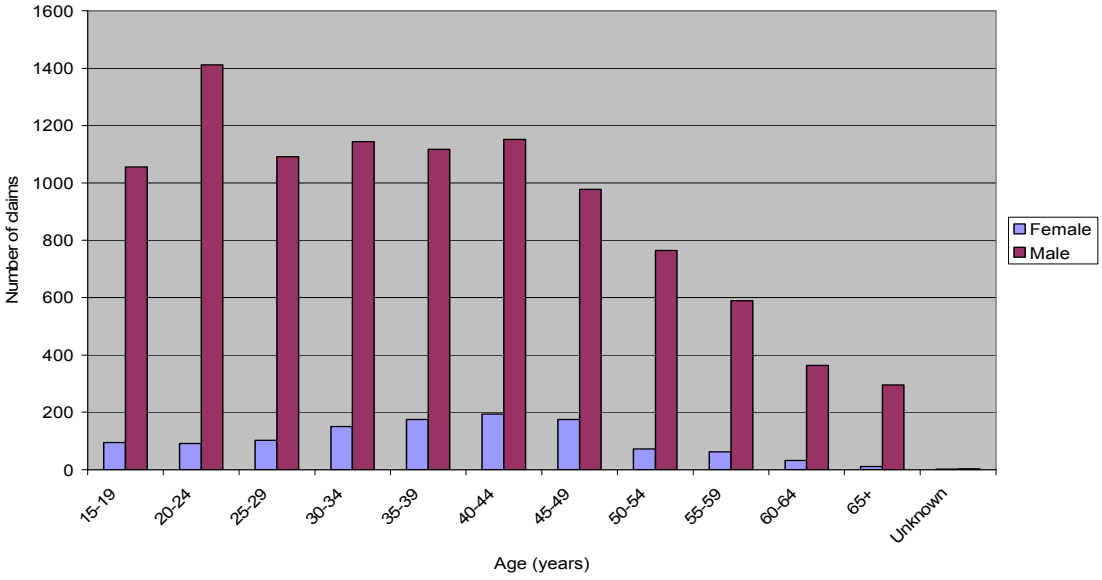

Figure 2: Claims by age of claimants

3.3 Claim type and costs

Over 70% of the analysed claims were for Medical Treatment; these ranged from 67% (woodchipping) to 85% (of Corrugated Paperboard Container Manufacturing claims). 18% of the 11,124 claims were entitlement claims (Figure 3). The cost (Figure 4) associated with the claims was less than $1500 in 78% of the claims, with 13% greater than $1500 and 9% unknown. Table 2 shows claim type by main industry sectors – Log Sawmilling (including Timber Resawing and Dressing), Wood Product Manufacturing nec and Wooden Structural Component Manufacturing, which accounted for 81% of the total claims.

Table 2. Claim type by main industry sectors

	Entitlement (%)	Medical fees (%)	Other (%)	Unknown (%)
Log Sawmilling, Timber Resawing and Dressing	980 (18.5)	3768 (71.2)	16 (0.3)	526 (9.9)
Wood Product Manufacturing nec	292 (15)	1465 (75.1)	6 (0.3)	188 (9.6)
Wooden Structural Component Manufacturing	342 (18.9)	1340 (74.2)	2 (0.11)	121 (6.7)

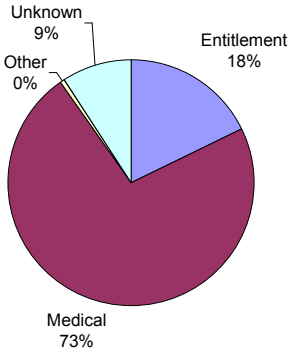

Figure 3: Type of claims

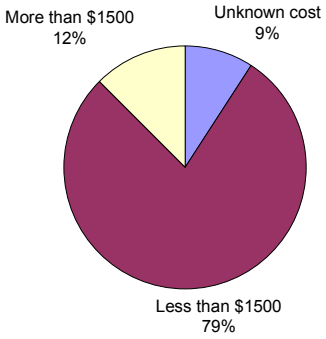

Figure 4: Costs of claims

Nearly 80% of the Medical claims were soft tissue injuries and lacerations. However, Entitlement claims also included high percentages of industrial deafness claims (13%) and fracture/dislocations (10%) – these only accounted for 1% and 2% of Medical claims (Table 3).

Table 3. Claim type by main ACC diagnosis

Entitlement	(%)	Medical fees	(%)
Soft Tissue Injuries	45	Soft Tissue Injuries	55
Laceration, puncture, sting	14	Laceration, puncture, sting	23
Industrial Deafness	13	Foreign Body In Orifice/eye	8
Fracture/dislocation	10	Fracture/dislocation	2
Gradual Process	5	Gradual Process	2
Amputation	3	Industrial Deafness	1
Hernia	2	Burns	1

3.4 Injuries

Injury types

ACC data provide a diagnosis according to specific categories. Also included is a READ description and in many cases, consideration of this description allows a more detailed diagnosis to be determined. Table 4 shows injuries according to ACC diagnosis and also uses the READ description to further categorise those entered as 'other', 'soft tissue injuries' and 'blank'. This highlights, for example, the large proportion – around 43% – of musculoskeletal injuries (MSD) in the industry, accounting for over 70% of the soft tissue injuries, 97% of the 'blank' unrecorded claims and 13% of 'other'.

The next largest group is 'laceration, puncture, sting', 22% of the total claims: the proportions are very similar across all the industry types. Males had a higher percentage of lacerations, 23% compared with female 16%. Table 5 shows the top injury types, and gender, using READ diagnosis as well as ACC diagnosis.

Table 4: Claims by injury diagnosis

ACC diagnosis	total claims (n=11124)	Detailed diagnosis from READ Code	% of total claims
Soft Tissue Injuries (contusion, strain, sprain, int)	5828	25 unknown 4247 msd (73%) 1192 contusion (20%) 375 crush (6%)	52.4
Laceration, puncture, sting	2451		22.0
Foreign Body In Orifice/eye	826		7.4
Fracture/dislocation	428		3.9
Industrial Deafness	369		3.3
Blank	316	3 unknown 276 msd (87%) 37 foreign body (12%)	2.8
Other	279	150 unknown (54%) 35 msd (13%) 76 foreign body (27%) 18 cellulitis	2.5
Gradual Process - Local Inflam.	187		1.7
Burns (burn,scald,corrosive Inj'y)	111		1.0
Amputation	73		0.7
Dental Injury	52		0.5
Concussion	46		0.4
Gradual Process - Compress Synd.	48		0.4
Hernia	42		0.4
Trauma Induced Hearing Loss	34		0.3
Occp.dis (ab/lead,bru,derm,hep,lep)	20		0.2
Inhalation/ingestion Specific Occ.	11		0.1
Contusion(intact Skin)inc Crushing	1		0.0
Occupational Asthma	1		0.0
Pain Syndromes	1		0.0

Table 5: Main injury types by gender

Injury types (from ACC diagnosis and READ code)	Total claims n=11124 (%)	Male %	Female %
Musculoskeletal Injuries (Soft Tissue msd Injuries, gradual process, compression syndr, OOS, Pain syndrome)	4794 (43)	88	2
Laceration, puncture, sting	2451 (22)	92	8
Contusion	1193 10.7)	87	13
Foreign Body In Orifice/eye	939 (8.4)	92	8
Fracture/dislocation	428 (3.8)	90	10
Industrial Deafness and trauma induced hearing loss	403 (3.6)	96	4
Crush (from soft tissue injury category)	375 (3.4)	89	11

Injury sites

Finger or thumb injuries represented 17% of total claims, followed by lower back/spine + back (14%), hand/wrist (10%), eye injuries (8%) and shoulder injuries (5%). All other body areas accounted for less than 5% of the total claims. There were some minor but insignificant gender variations, with proportionally more female eye injuries (8% and 5% respectively) and hand/wrist injuries (13% compared to 10%).

Over a quarter of the finger/thumb injury claims were in the age 15-19 age group: this percentage gradually dropped over subsequent age groups (presumably as experience and skills develop and as the proportion of people involved in front line manual tasks reduces. The claims for this body area are closely matched over claim distribution, with 37% in sawmilling, 19% in wood product manufacturing nec, and 18% Wooden Structural Component Manufacturing. 4% of claims were ‘ear’ related and over 60% of these were claimants over 60 years of age, largely diagnosed as industrial deafness.

3.5 Industry sector

Log sawmilling operations (including Timber resawing and dressing) accounted for more than 48% of the claims, followed by Wood Product Manufacturing nec (17.5%) and Wooden Structural Component Manufacturing (16.2%, Table 6). Detail of sector activities, according to ANZSIC descriptions, is in the Appendix.

Table 6: Claims by Industry type

	Number (n=11124)	%
Log Sawmilling, Timber Resawing and Dressing	5290	47.6
Wood Product Manufacturing nec	1951	17.5
Wooden Structural Component Manufacturing	1805	16.2
Plywood and Veneer Manufacturing	627	5.6
Fabricated Wood Manufacturing	421	3.8
Paper Product Manufacturing nec	382	3.4
Pulp, Paper and Paperboard Manufacturing	296	2.7
Corrugated Paperboard Container Manufacturing	274	2.5
Solid Paperboard Container Manufacturing	42	0.4
Paper Bag and Sack Manufacturing	18	0.2
Wood Chipping	18	0.2

The breakdown of injury types and sites (body area) is similar for each sector (Table 7 and Figure 5), although there was a slightly higher proportion of laceration claims in Wooden Structural Component Manufacturing compared to the other top sectors, with fewer contusions.

Table 7: Percentage of main injury types in main industry sectors

	Musculoskeletal Injuries	Laceration, puncture, sting	Contusion	Foreign Body
Log Sawmilling, Timber Resawing and Dressing (n=5290)	43%	20%	12%	8%
Wood Product Manufacturing nec (n=1951)	43%	22%	12%	9%
Wooden Structural Component Manufacturing (n=1805)	42%	28%	7%	10%

Log Sawmilling & Timber Resawing/Dressing

Most (over 65%) of the log sawmilling claims were from plant operators, assemblers, labourers, with various other occupations represented to a less extent, such as forestry workers and loggers, truck and machinery operators and saw doctors. The proportion of 'less than $1500' claims was the same – 78% – for sawmilling as for the claims as a whole as was the gender distribution. Claim types were also the same (with 53% soft tissue injuries and 43% of claims being musculoskeletal disorders). Just under 20% of claims in this sector were to the back or neck, with finger/thumb injury claims accounting for 17% and hand/wrist injuries 10%.

Injury claims were distributed fairly evenly across age groups, and 93% of claims were male. 60% were European and 27% Maori. 96% of the claims in log sawmilling were from non-ACC accredited employers, compared with 86% overall. This suggests a high proportion of the injuries occurred in smaller sawmills – those with potentially less mechanisation and less robust health and safety management systems.

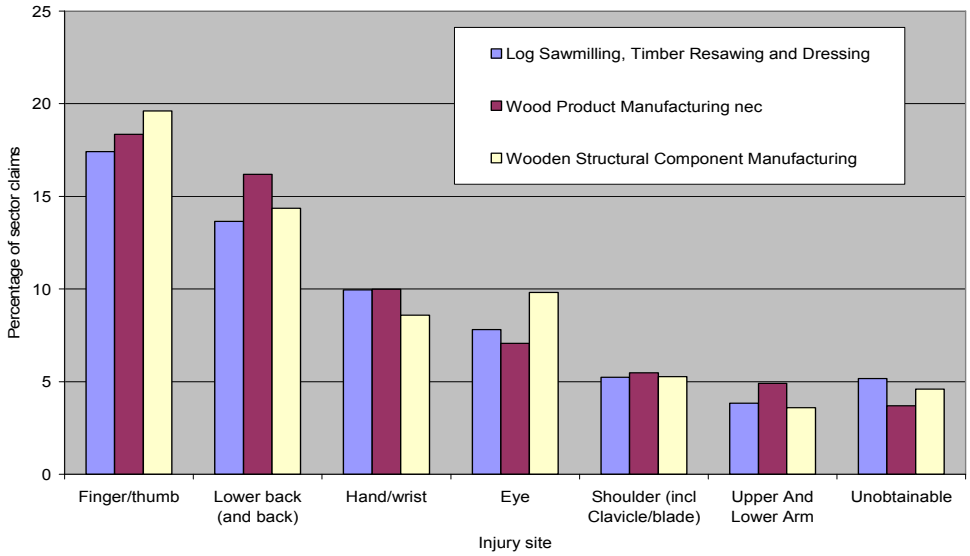

Figure 5. Main Injury sites, for primary industry sectors (percentage)

Wood Product Manufacturing nec

There was a higher percentage of female claimants in this industry sector than overall (20%) and more of the employers were ACC accredited (47%). Other claim characteristics were similar to the overall data.

Wooden Structural Component Manufacturing

Only 3% of claimants on this industrial sector were female and a higher proportion was European (75%) with fewer Maori claims (10%). 99% were from non-AC accredited employers. The injury types varied too, with nearly 28% of claims being industrial deafness, but only nine 'lacerations' claims. 14.5% of claims in this sector had cost over $1500, which is higher than the overall proportion of 12%.

3.6 ACC Accreditation

Only 15% of the claimants related to ACC-accredited employees. This varied slightly within industry groups: of the three most represented groups, Log sawmilling operations and Wooden Structural Component Manufacturing had less than 5% accreditation but Wood Product Manufacturing nec comprised 47% accredited employers.

3.7 Accident Description Analysis

The narrative or accident description in the top three industry sectors (provided by 93% of the claimants), was analysed for inclusion of a selection of ten key event words, giving an indication of events or risk factors, (or part-words), summarised in Table 8. Of the selected key words, 'lift' was the most frequent key event included in the narrative of these three industry sectors, occurring in between 15.5 and 22.4% of the claims. *cut* was more apparent in the Wooden Structural Component Manufacturing (11.4%) than the other two sectors.

Further simple content analysis within these industry sectors was conducted for the two main injury types – soft tissue injuries, and lacerations (Table 9).

The most predominant injury category overall was soft tissue injuries, accounting for 52% of all claims in these sectors. In the three top industry sectors, between 32% and 57% of the soft tissue injuries category were associated with lifting, pulling or twisting, which further highlights the 73% of these injuries being musculoskeletal in nature. The association with lifting was particularly high – 41% – in the Wooden Structural Component Manufacturing sector, and less significant in wood product manufacturing. In the next injury category, lacerations, between 5 and 14% were linked with some sort of slip.

A further ten words (*crush*, *trap*, *land*, *trip*, *lacerat*, *sprain*, *fall*, *bang*, *struck*, *repe*) yielded less than 5% frequency.

Table 8. Content analysis of the three industry sectors most represented in the ACC statistics.

	Log sawmilling, timber re-sawing and dressing (n=5290)		**Wood Product Manufacturing nec (n=1951)**		**Wooden Structural Component Manufacturing (n=1805)**	
	number	%	number	%	number	%
lift	947	17.9	302	15.5	404	22.4
hit	410	7.8	105	5.4	97	5.4
cut	405	7.7	141	7.2	205	11.4
pull	398	7.5	79	4.0	46	2.5
slip	394	7.4	72	3.7	165	9.1
fell	334	6.3	101	5.2	103	5.7
twist	315	6.0	74	3.8	114	6.3
caught	287	5.4	90	4.6	60	3.3
jam	201	3.8	30	1.5	31	1.7
strain	200	3.8	42	2.2	91	5.0

Table 9. Analysis of soft tissue injury and laceration claims, three industry sectors.

	Soft Tissue Injuries			Lacerations, punctures, sting		
		Number	%		Number	%
Log Sawmilling, Timber Resawing and Dressing (n=5290)	*lift*	735	32.5	*cut*	284	26.3
	pull	286	12.6	*hit*	124	11.5
	twist	275	12.1	*slip*	116	10.7
	fell	229	10.1	*caught*	113	10.5
	slip	214	9.5	*lacerat*	67	6.2
	hit	190	8.4	*trap*	63	5.8
	strain	169	7.5	*lift*	45	4.2
	caught	128	5.7	*jam*	46	4.3
	jam	121	5.3	*fell*	42	3.9
	crush	98	4.3	*pull*	42	3.9
	Soft Tissue Injuries			**Lacerations, punctures, sting**		
		Number	%		Number	%
Wood Product Manufacturing nec (n=1951)	*lift*	217	20.8	*cut*	79	18.6
	fell	66	6.3	*caught*	35	8.3
	twist	60	5.7	*lift*	33	7.8
	pull	57	5.5	*hit*	24	5.7
	hit	56	5.4	*slip*	23	5.4
	caught	37	3.5	*fell*	19	4.5
	slip	36	3.4	*lacerat*	17	4.0
	strain	35	3.3	*pull*	10	2.4
	cut	38	3.6	*twist*	6	1.4
	jam	22	2.1	*jam*	6	1.4
	Soft Tissue Injuries			**Lacerations, punctures, sting**		
		Number	%		Number	%
Wooden Structural Component Manufacturing (n=1805)	*lift*	351	41.1	*cut*	144	28.6
	twist	101	11.8	*slip*	72	14.3
	strain	80	9.4	*lacerat*	45	8.9
	slip	65	7.6	*caught*	37	7.3
	fell	60	7.0	*hit*	27	5.4
	hit	51	6.0	*fell*	23	4.6
	pull	37	4.3	*lift*	18	3.6
	trip	23	2.7	*jam*	9	1.8
	land	22	2.6	*trip*	7	1.4
	sprain	20	2.3	*pull*	5	1.0

3.8 Incidence Rates By Sector

Statistics New Zealand figures indicate that there were 27,320 people employed in the timber processing industries in 2005 and 25,740 in 2006 (broken down into the three main ANZSIC groups - Log Sawmilling and Timber Dressing, Other Wood Product Manufacturing, Paper and Paper Product Manufacturing). From the ACC compensation claims data, incidence rate for the timber processing industries as a group was 211 claims per 1000 FTE in 2006. In log sawmilling, which was associated with 38% of all the ACC claims in the industry, there was an incident rate of 263 per 1000 FTE for the same year. This is high compared to agriculture, forestry and fishing as a whole have an incidence rate of 190 claims per 1000 FTEs (2005 ACC figures).

The incidence rate based on entitlement claims only (18% of the total claims) – which may indicate the more severe injuries requiring time off work – is 36 claims per 1000 FTE for 2006. Tables 10 and 11 summarise incident rates for the industry sectors and for entitlement and medicals claims, in 2005 and 2006.

Table 10: Incident rates in the Timber Processing Industry (ACC claims per 1000 FTE)

	2005	2006
Timber Processing Industry as a whole (C23)	209	211
- Log Sawmilling, Timber Resawing and Dressing (C231)	270	264
- Other Wood Product Manufacturing* (232)	212	222
- Paper and Paper Product Manufacturing (233)	94	87

**Includes Wood Product Manufacturing nec and Wooden Structural Component Manufacturing*

Table 11: Incident rates: Entitlement (Ent) and Medical treatment (Med) (ACC claims per 1000 FTE)

	2005		2006	
	Ent	Med	Ent	Med
Timber Processing Industry as a whole (C23)	38	151	36	154
- Log Sawmilling, Timber Resawing and Dressing (C231)	51	190	48	191
- Other Wood Product Manufacturing* (C232)	37	156	37	163
- Paper and Paper Product Manufacturing (C233)	16	71	13	66

**Includes Wood Product Manufacturing nec and Wooden Structural Component Manufacturing*

To provide some context, Table 12 lists incidence rates for all entitlement claims and MSD entitlement claims in 2005/06 across a range of similar industries. (Variation in incidence rates for Log Sawmilling (Table 11) is due to different reporting timeframes.) Of significance is that this sector has the third highest incidence for all claims as well as MSD claims, behind meat processing and fishing and ahead of other historically 'high injury risk' industries such as construction, agriculture and mining.

Table 12: Incidence rates and cost per claim comparisons

Industry	All New Entitlement Claims			MSD New Entitlement Claims		
	Claims	Cost / Claim	Incidence Rate	Claims	Cost / Claim	Incidence Rate
Log Sawmilling & Timber Resawing and Dressing	535	$5027	60	260	$4587	29
Meat Processing	2299	$3092	95	1247	$3469	51
Seafood Processing	197	$3658	34	143	$3626	25
Poultry Processing	70	$4022	53	53	$4588	18
Fishing	162	$8991	71	82	$9445	36
Mining	233	$6471	46	106	$7216	21
Dairy Product Manufacturing	381	$3951	37	273	$3578	26
Construction	5471	$6430	48	2725	$6589	24
Agriculture	3058	$6188	38	1257	$6316	16

(Derived from ACC data for 7/05-6/06 and Statistics NZ workforce data.)

4. Conclusions

The timber processing industries employ more than 25,000 people in well over 2000 enterprises. ACC data indicate a high number of injury claims, and high injury incidence rates. Most of the claims were for medical treatment and were associated with a cost less than $1500 – but the cost to the country and the industry is still substantial. The personal cost is also likely to be high, along with indirect costs for treatment such as time off work – or time taken from personal time – to receive treatment. Although a much smaller percentage of total number of claims, the costs of entitlement claims are the largest and usually make up the majority of ongoing claims for ACC due to the severity of these injuries.

The main injury types are categorised as either soft tissue injuries (contusion, strain, sprain, internal injury) or lacerations (including punctures and stings). These two categories reflect the physical nature of the timber processing activities and the risks to which workers are exposed. A high proportion of the soft tissue injuries, and of some other injury categories, were musculoskeletal disorders – these have already been highlighted in a number of industries as being costly and problematic over the long term and this data analysis suggests that it is an area worthy of continued attention within timber processing sectors.

Other injury categories with high numbers / high proportion of entitlement claims are industrial deafness and fracture/dislocations which, given their ongoing nature may well contribute significantly to overall costs.

The main sector for injury incidence is log sawmilling and timber resawing/dressing. Sectors within 'Other wood product manufacturing are also quite high, though these industries are harder to define than log sawmilling which has a finite number of sites and range of work tasks.

The accident description analysis provided some background into incident features – giving an indication of causes and risk factors. However, this analysis was provisional and the accident description data needs to be analysed in more depth, through the development of new coding variables, to identify factors such as initiating event(s), injury agent and injury event.

Appendix Detail of sector activities from ANZSIC descriptions (1996).

C231100	Log Sawmilling:
	Bark, ground, mfg
	Shook mfg (for containers)
	Timber, resawn, mfg (from logs sawn at the same unit)
	Timber, rough sawn, mfg
C231200	Wood Chipping:
	Hardwood woodchip mfg
	Softwood woodchip mfg
C231300	Timber Resawing and Dressing:
	Building timber, dressed, mfg
	Dressed timber or mouldings mfg
	Dressed timber, kiln dried or seasoned, mfg
C232100	Plywood and Veneer Manufacturing:
	Cores, plywood or veneer mill, mfg
	Plywood mfg
	Veneer or veneer sheets, wooden, mfg
C232200	Fabricated Wood Manufacturing:
	Cellular wood panels mfg (except doors)
	Chip board mfg
	Corestock mfg
	Fabricated boards, wooden, mfg
	Hardboard mfg
	Particle board mfg
	Resin-bonded board mfg (of wood chips, wood particles, wood wool or sawdust)
	Softboard mfg
C232300	Wooden Structural Component Manufacturing:
	Door, wooden or wooden framed, mfg
	Door-window unit, wooden, mfg
	Roof truss, wooden, mfg
	Structural fitting, wooden, mfg
	Wall frame, wooden, mfg
	Wooden framed window mfg, complete with glass
C232900	Wood Product Manufacturing nec
	Barrel, wooden, mfg
	Cask, wooden, mfg
	Cork or cork good, mfg
	Frame, wooden picture or mirror, mfg
	Packing case, wooden, mfg
	Parquet strip assembled in panel mfg
	Tool handle, wooden, mfg
	Vat, wooden, mfg
	Wood flour or wool mfg
	Wood products mfg nec
C233100	Pulp, Paper and Paperboard Manufacturing:
	Cardboard mfg nec
	Newsprint mfg
	Paper mfg nec
	Paper pulp mfg
	Paperboard mfg nec
	Solid fibreboard sheets mfg
	Wood pulp mfg
C233200	Solid Paperboard Container Manufacturing:
	Containers, solid paperboard, mfg
C233300	Corrugated Paperboard Container Manufacturing:
	Containers, corrugated paperboard, mfg
	Sheeting, corrugated paperboard, mfg
C233400	Paper Bag and Sack Manufacturing:
	Bags, paper, mfg
C233900	Paper Product Manufacturing nec:
	Insulation materials, cellulose fibre, mfg
	Paper products mfg nec
	Tissue or sanitary papers mfg
	Toilet paper rolls mfg
	Trays and cartons, paper pulp, mfg
	Wallpapers mfg