Department of **Natural Resources and Mines**

Queensland Mines and Quarries

Safety Performance and Health Report

1 July 2011–30 June 2012

Queensland Government

Photography
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Disclaimer
The data in this report are derived from the Department of Natural Resources and Mines (DNRM) Queensland mining industry Lost Time Accident database, in addition to information—including survey responses—supplied by mining and quarrying operators throughout Queensland.

Some data have been summarised or consolidated in order to present a standardised format in this report. Although DNRM makes every effort to verify supplied data, it accepts no responsibility for data that was incorrect when supplied. The data in this report may not be fully representative of the industry or any component of it.

Please note: *The figures reported in this document are collected from mine sites on an ongoing basis. The figures are not finalised until the following year. For this reason there may be variations in the figures reported for the previous period of 2010–11.*

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Abbreviations

CFMEU	Construction, Forestry, Mining and Energy Union
DI	disabling injury
DNRM	Department of Natural Resources and Mines
DPM	diesel particulate matter
EMT	emergency management team
FARP	first-action response plan
HIAC	Health Improvement and Awareness Committee
HPI	high potential incident
LTI	lost time injury/disease
LTIFR	lost time injury frequency rate
MTI	medical treatment injuries
NMA	nominated medical advisor
OESR	Office of Economic and Statistical Research
PPI	positive performance indicators
QMRS	Queensland Mines Rescue Service
RTO	registered training organisation
SHMS	safety and health management system
SMS	safety management system
SSE	site senior executive
SSHR	site safety and health representative
TRI	total recordable injury
TRIFR	total recordable injury frequency rate (injuries per million hours worked)
WBV	whole-body vibration

Definitions

Coal mines	Mines subject to the *Coal Mining Safety and Health Act 1999* and associated Regulations.
Days on alternative duties	The number of days a worker is unable to perform his/her regular job and has been assigned other temporary or modified duties. Alternative duties include a changed work environment, roster or shift pattern.
Days lost	All rostered shifts that a worker is unable to work because of injury, not including the day of the injury. This also includes days lost because of recurrences of injuries from previous periods and days on alternative duties after returning to work. A fatal injury is treated as 220 days lost (as per Australian Standard AS1885.1–1990, Clause 6.17).
Disabling injury	A work-related injury or disease resulting in a worker being unable to fully perform his/her regular job. Either light or alternative duties are performed.
Duration rate	The average time (days) lost and the time (days) on alternative duties for each LTI or DI. In this report, time lost includes all time lost for an incident to date.
High potential incident	An event, or series of events, that causes or has the potential to cause a significant adverse effect on the safety or health of a person.
Lost time injury/ disease	An incident resulting in a fatality, permanent disability or time lost from work of one shift or more. The shift on which the incident occurred is not counted as a shift lost.
Lost time injury frequency rate	The number of lost time injuries/diseases per million hours worked.
Lost time and disabling injury frequency rate	The number of lost time injuries/diseases and disabling injuries per million hours worked.
Medical treatment injuries	Those incidents, which were not lost time injuries or disabling injuries, for which first aid and/or medical treatment was required by a doctor, nurse or person qualified to give first aid.
Metalliferous mines	Mines subject to the *Mining and Quarrying Safety and Health Act 1999* and associated Regulations.
Quarries	Excavations of hard rock for use in construction; covered by the *Mining and Quarrying Safety and Health Act 1999* and associated Regulations.
Severity rate	The time (days) lost and time (days) on alternative duties per million hours worked.
Total recordable injury	Includes the number of fatalities, lost time injuries/diseases, medical treatment injuries and disabling injuries.
Total recordable injury frequency rate	The number of total recordable injuries/diseases per million hours worked.

The definitions in the report for bodily location, breakdown agency, lost time injury/disease, mechanism of injury, nature of injury, incidence rate and frequency rate generally conform to the workplace injury and disease recording standard (AS 1885.1–1990). The Standard's 'average lost time rate' (number of days lost per lost time injury) is called duration rate. The Standard's 'no lost time injuries/diseases' (those occurrences that were not lost time injuries and for which first aid or medical treatment was administered) are called *medical treatment injuries or disabling injuries* (the injured person cannot return to their normal job and is put on alternative duties). When calculating duration rate (number of days per lost time injury) and severity rate (days lost per million hours worked) for a lost time injury, the days lost include the days away from work and the days on alternative duties. The Australian Standard is not clear on whether days lost should include days on alternative duties. It is common practice in other Australian jurisdictions to only include days away from work in duration and severity calculations. However, as the number of days required to be spent on alternative duties is a reflection of the severity of the injury, it is considered that including these days presents a more accurate picture of the industry with respect to the severity of an injury or illness.

Message from the Commissioner for Mine Safety and Health

I am pleased to present the *Queensland Mines and Quarries Safety Performance and Health Report* for the year 1 July 2011 to 30 June 2012.

The responsibility for the regulation of mine safety and health lies with the Mine Safety and Health Group of the Department of Natural Resources and Mines (DNRM). The primary role of Mine Safety and Health is to make a difference each day in a way that will help the mining industry achieve its goal of Zero Harm.

The aim of this report is to focus the attention of mine management and mineworkers on safety and health priorities and to encourage and prioritise proactive planning of strategies to improve safety and health performance.

The Queensland mining industry continues to maintain its prime position as one of the safest in the world; however, our safety outcomes in some areas have deteriorated and this is a cause for concern. The lost time injury rate, particularly for underground coal mines, has increased significantly and the Mines Inspectorate is responding to this problem with increased vigilance and a no-tolerance policy for life-threatening conditions and behaviour. (The chief inspectors discuss these matters in more detail in their joint report.)

We have seen a disturbing rise in dangerous behaviour in underground coal mines. In 2012, a mineworker was caught smoking underground in one of our gassiest mines and there have been several instances of tampering with methane detectors on mining equipment. This behaviour will not be tolerated and action will be taken against people involved in these activities. Such behaviour problems might be linked to the influx of newcomers to the industry who do not fully appreciate the dangers of underground coal mining. The training and industry familiarisation of these people is critically important and we must be certain that they are ready for the job before they commence work underground.

Numerous mine disasters in this State and elsewhere in Australia can be linked to these types of occurrence and I am determined that we will not have another one in Queensland. The lessons of history are there and we ignore them at our peril.

Sadly, I have to report that there was one fatality for the year. That fatality occurred at a central Queensland quarry where a young man was killed when he came into contact with a conveyor system. Over the years there have been several injuries and fatal accidents associated with this type of equipment, yet the standard isolation procedure is still being ignored. I extend my deepest sympathy to the family and friends of the young man involved in this tragic accident.

A positive aspect of 2011–12 has been the increase in the reporting of high potential incidents (HPIs), which demonstrates the maturity of the mining industry with respect to this important learning statistic. We want industry to learn from these near misses and hopefully avoid any further incidents.

Overall, however, this has not been a good year from a statistical point of view and we continued to see accidents that should never have occurred. The fact is that we are placing inherently unreliable human beings in charge of highly complicated equipment and they are demonstrating their unreliability in a plethora of accidents. The inspectorate is committed to applying human factors theory to try to minimise this problem and to identify 'at-risk' workers before they hurt themselves and others.

I spent much of the last 12 months of the reporting period in New Zealand working with the Pike River Royal Commission; the final report was released at the end of October 2012. The document is likely to be a difficult read for the New Zealand mining community and there will be some sobering lessons to come from it. I will ensure that any lessons which can benefit Australia will be fully applied as a memorial to our 29 colleagues who died in this disaster. Our Chief Inspector of Coal Mines Gavin Taylor also acted as the New Zealand Chief Inspector for the first part of 2012. During this time he was instrumental in the rejuvenation of the New Zealand Mines Inspectorate.

I would like to take this opportunity to thank Deputy Chief Inspector of Coal Mines Ken Singer for relieving in the Chief Inspector's position while Gavin Taylor was in New Zealand for this extended period. I appreciated his dedication to the position and the professionalism he showed while fulfilling these duties.

Coming back to our own State, a Central Queensland coal mine fought a spontaneous combustion event for several months. Spontaneous combustion is always with us and I am happy to report that the efforts of the mine management, in concert with the Mines Inspectorate and Simtars, resulted in the mine returning to production with no injuries to any person.

The National Mine Safety Framework project is drawing to a close and there will be a degree of standardisation of legislation across Australia, particularly in the three big mining states of Queensland, New South Wales and Western Australia. We have maintained our guiding principle that there will be no diminution of Queensland's mine safety and health standards and we are also cognisant that there should be no significant cost imposts on industry. The new legislation should be operating by 2013.

It is also important to highlight the Mines Inspectorate's continued investigation into and encouragement in the use of collision-avoidance equipment incorporating proximity-detection and warning systems. The use of collision-avoidance equipment is vital in reducing the risk of unplanned vehicle interaction and in preventing people coming to harm.

In closing there can be no greater task facing the mining industry than ensuring that every one of our workers gets home safe and healthy to their families every day. I commend this target to you.

Stewart Bell
Deputy Director-General—Safety and Health
Commissioner for Mine Safety and Health

Summary from the Chief Inspectors of Mines

We experienced one fatality for the year and we extend our heartfelt sympathies to the parents, family and friends of the young man who lost his life. The fatality occurred at a quarry in June 2012 when this relatively inexperienced quarry worker was pulled into a conveyor and killed. The incident is still being investigated by the Mines Inspectorate as we write.

One fatality is one too many and the heartbreak that attends all such incidents must be considered by all involved. To that end, we can only commend the work being undertaken by A Miner's Legacy, the not-for-profit foundation established to provide support, advice and assistance to families of mineworkers involved in fatal mine accidents. The organisation was set up by Mark Parcell, ably assisted by Rachelle Blee, whose husband Jason was killed in an underground accident at Moranbah North coal mine in 2008, and Joanne Ufer, whose son Josh lost his life along with 28 others in the Pike River disaster in New Zealand in 2010. The message given by those two ladies recognises the absolute devastation and loss experienced by a family due to a loved one not coming home.

The support the foundation can provide through knowing only too well the abject misery caused by an industrial fatality is, we think, most invaluable; for example, comforting assistance has been provided to the parents of the young man killed at the quarry. We hope people will take heed of that salutary lesson so we can eliminate all fatalities from our workplaces.

The year in review, in many respects, has been one of the worst for accidents and poor safety outcomes since the inception of new legislation in 2001. Over the last few years we have generally enjoyed a reduction in the majority of the metrics measured. However, in 2011–12 we have experienced a rise in many of the lag indicators and, given other forces at play (of which more below), this is a significant concern. Most disconcerting has been the nature of many of the incidents which is causing both us and the rest of the inspectorate significant disquiet.

Let us look at the statistics. The lag indicators listed below are a mixed bag. However we cannot focus on numbers in isolation; they must be viewed alongside the rise in numbers employed in Queensland mines over the previous year. Figures for 2011–12 compared to 2010–11 show:

- lost time injuries (LTIs) up from 311 to 452 injuries
- lost time injury frequency rate up from 3.4 to 3.9 injuries per million hours worked
- days lost to LTIs down from 16 872 to 13 235 days
- lost time injury severity rate down from 182 to 113 days
- days lost to disabling injuries up from 11 677 to 12 214 days
- medical treatment injuries up from 853 to 1140 injuries
- permanent incapacities down from 57 to 28 injuries or illnesses.

All sectors of industry, apart from the quarry sector whose lost time injury frequency rate was already high, experienced an increased incident rate; this was most pronounced in the underground coal sector and the metalliferous surface and underground sectors.

One measurement that continues to climb but which conversely gives us some comfort is the number of high potential incidents being reported. We have continued to see the reporting of HPIs increase over the years as a result of the Mines Inspectorate's education campaign. However, the possibility cannot be ignored that this year's increase may also indicate an inexperienced workforce that is more vulnerable to accidents and safety breaches. This year we had 2390 high potential incidents recorded against a total of 1979 for the previous 12 months. In the past incidents were being hidden and not reported. By contrast, incidents are now reported so we know that they are being investigated and that latent hazards are, being eliminated or at least controlled if corrective controls are implemented.

It is the nature of some of the incidents which has caused our disquiet; examples are listed below:

- a contract miner found smoking in an underground coal mine
- an electrician found working on live equipment in a 'gassy' development panel
- a mine deputy (ERZ controller) failed to conduct an inspection before powering an auxiliary fan
- a truck driver had a micro sleep and ran in to the back of a haul truck. The driver only avoided being decapitated due to the offset contact of the two trucks.
- too many light and heavy vehicles lost control and rolled on wet roads or when moving from wet to dry conditions
- two contract cleaners in a light vehicle T-boned a scraper which crushed the front of their vehicle back to the passenger compartment
- a dragline house swung and all but demolished the rear of a service truck with two maintenance personnel in the cab.

The litany of near disasters does not stop there; disconcertingly it goes on and on. These are merely a selection of the worst cases. There are several factors that contribute to this worrying situation.

We believe that one significant factor in the decrease in safety performance is poor training and mentoring. For some time now we have been railing against the poor standard of training and assessment available. All too often we hear of registered training organisations (RTOs) significantly reducing training schedules, not training on mine sites in realistic conditions, and shortcutting assessments. Even though the coal industry produced Recognised Standard 11 and followed that up with significant written and verbal communication to explain what was required, we still know about RTOs and operators who ignore those requirements.

Another significant factor, we believe, is the number of people promoted to supervisor level and above who do not understand legislative requirements, hazard identification or the risk management process. We continually, through investigation or audits, uncover poor basic understanding of the processes these people are supposedly managing or supervising.

Conventional wisdom states that safety and production go hand in glove. If you do not accept what we are stating then look at coal productivity figures over the last few years: they

have been almost in free fall. We think that the problem can be summarised thus: You cannot manage what you do not understand; or even, you do not know what you do not know. The fall in productivity and the increase in incidents can both be traced back to either a lack of training or ineffective training. Our industry, until recently, grew exponentially and possibly too quickly to effectively transfer skills and knowledge.

Particularly regrettable are the significant tranches of cash invested in training that have not delivered 'the bang for their buck' due to poor or even non-existent management of the training process. There are many very creditable RTOs, but they are at times outnumbered by their less-than-competent competitors.

The high turnover of senior personnel on some sites also is a contributory factor. Constant change does nothing to enhance safety or health. How can a safety culture be developed in a mine whose site management has changed several times in a few years? The knowledge of safety and health management systems on these high turnover sites is nothing short of abysmal.

Now we face another challenge: the 'forces at play' referred to at the beginning of our summary. We are talking about the downsizing of the workforce, necessitated through a significant drop in coal prices and reducing productivity rates. At times such as these, our vigilance for safety needs to be significantly increased because it is all too easy to be distracted by threats to one's employment. We all must focus on the task at hand. We are in a hazardous industry and we must respect the hazards that can so tragically leave loved ones behind if respect is not given.

During the year, mines inspectors undertook 1543 inspections and 55 audits[1]. From those inspections, 375 directives and 1444 notices of substandard conditions or practices resulted. During the period we also investigated 96 complaints on a wide range of issues. Many hours were expended in investigating high potential incidents and compliance matters.

At times, our investigations have revealed examples of non-compliance of such significance that we have had no alternative but to recommend the Commissioner prosecute those involved. We do not undertake prosecution lightly and we hold serious discussions before we take that step. Under the compliance policy, prosecution is designated a Level 5 compliance. You can find the Mines Inspectorate compliance policy on our website www.mines.industry.qld.gov.au

For other mine-related incidents the compliance policy requires that accountability is achieved through Level 4 and 3 compliance meetings. In the previous 12 months there were six Level 4 compliance matters (all in the coal sector), nine Level 3 compliance matters, seven in the metalliferous and quarry sector, and two in the coal sector.

During the year the Commissioner and inspectors delivered approximately 40 papers and addresses to industry. The Mines Inspectorate was involved in a number of conferences this year including the 10th Annual Quarrying Safety and Health Seminar, and the 7th Annual Quarrying and Small Mines Safety and Health Seminar. The Mines Inspectorate also scheduled an information session for 30 August 2012 to help and advise site senior executives of their obligations at exploration sites. Another seminar on spontaneous combustion management is planned for the early part of 2013.

As a consequence of the 2010 mining disaster at Pike River, the New Zealand Government requested the department allow the Chief Inspector of Coal Mines to act as Chief Inspector in New Zealand until a new permanent appointment could be made. Gavin Taylor writes about his contribution to the New Zealand Mines Inspectorate.

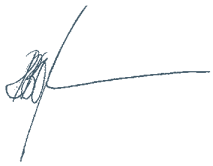
I spent almost six months in New Zealand where part of my role was to assist in the setting up of a high hazards unit (HHU) in the Department of Labour which would house the Mines Inspectorate and the Petroleum and Gas Inspectorate. I also provided leadership and direction and developed regulatory skills for the HHU team. Another of my tasks was to assist with the consideration of additional mining legislation to address the perceived shortfall in current regulations exposed by the Pike River disaster.

While I will continue to be contracted to the New Zealand Department of Labour on an 'as required' basis, my main focus is now back on the Queensland mining industry.

During my time in New Zealand, Ken Singer, the Deputy Chief Inspector of Coal Mines, acted as the Chief Inspector and his efforts were appreciated.

We wish to thank the contributors to this report for their assistance. We look forward to this document being used to assist industry to identify safety and health priorities for 2012–13 and beyond. We encourage industry to continue to work with the Mines Inspectorate to ensure Queensland maintains its place as a best practice example of mining safety and health performance and to strive vigilantly for our common goal of an industry free of safety and health incidents.

Gavin Taylor
Chief Inspector of Coal Mines



Rob O'Sullivan
Chief Inspector of Mines
(Metalliferous and Quarries)

1 The 2% decrease in the number of inspections from an earlier reported figure is due to the identification and removal of duplicated and incomplete entries from the reporting system

Underground mining, Queensland
Photo: Queensland Government Image Library

Table 1: Key performance indicators 2011–12

	Number of lost time injuries (LTI)		Number of disabling injuries (DI)		Number of medical treatments (MTI)		Number of high potential incidents (HPI)		LTI – days lost@		Number of DI days		LTI frequency rate (LTIFR)*		LTI severity rate #@		LTI Duration rate *@		LTI + DI severity rate #		LTI + DI duration rate *		Million hours worked *		Number of permanent incapacities		Number of fatalities	
	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12	10–11	11–12
Coal surface	150	190	270	315	403	412	1 228	1 380	10 297	6 656	6 010	5 373	3.0	3.1	205	107	68.6	35.0	324	194	38.8	23.8	50.3	61.9	40	16	2	0
Coal underground	53	116	184	192	271	348	338	398	2 463	3 441	3 836	2 542	4.4	6.8	205	201	46.5	29.7	524	349	26.6	19.4	12.0	17.1	10	3	0	0
Coal subtotal	**203**	**306**	**454**	**507**	**674**	**760**	**1 566**	**1 778**	**12 760**	**10 097**	**9 846**	**7 915**	**3.3**	**3.9**	**205**	**128**	**62.9**	**33.0**	**363**	**228**	**34.4**	**22.2**	**62.3**	**79.1**	**50**	**19**	**2**	**0**
Metalliferous surface	53	71	35	59	88	195	183	302	1 375	1 294	876	1 321	2.9	3.6	76	65	25.9	18.2	125	132	25.6	20.1	18.0	19.8	1	3	0	0
Metalliferous underground	27	49	51	92	60	149	162	216	1 132	1 108	955	2 747	2.6	3.4	111	78	41.9	22.6	204	271	26.8	27.3	10.2	14.2	1	3	1	0
Metalliferous subtotal	**80**	**120**	**86**	**151**	**148**	**344**	**345**	**518**	**2 507**	**2 402**	**1 831**	**4 068**	**2.8**	**3.5**	**89**	**71**	**31.3**	**20.0**	**154**	**190**	**26.1**	**23.9**	**28.2**	**34.0**	**2**	**6**	**1**	**0**
Quarries	28	26	0	10	31	36	68	94	1 605	736	0	231	14.2	6.9	816	196	57.3	28.3	816	258	57.3	26.9	2.0	3.7	5	3	0	1
TOTAL	**311**	**452**	**540**	**668**	**853**	**1 140**	**1 979**	**2 390**	**16 872**	**13 235**	**11 677**	**12 214**	**3.4**	**3.9**	**182**	**113**	**54.3**	**29.3**	**309**	**218**	**33.5**	**22.7**	**92.5**	**116.8**	**57**	**28**	**3**	**1**

#Rounded to whole numbers.
*Rounded to 1 decimal place
@ Days lost to LTIs include lost time days and days on alternate duties

Dragline, Meandu Mine, Queensland
Photo: DNRM

1. Industry safety and health performance

This report summarises the accident and incident data collected from Queensland mines and quarries that are subject to the provisions of the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*. It relates to accidents and incidents that occurred at mine sites from 1 July 2011 to 30 June 2012. Accidents that occurred while employees were travelling to or from work are not included in the analysis. Fatalities, accidents that resulted in injuries involving the loss of at least one full working shift, disabling injuries (DIs)—employees on alternative/light duties—and medical treatment injuries (MTIs) are reported. High potential incidents (HPIs) are also reported. The report was prepared using the Department of Natural Resources and Mines (DNRM) Queensland mining industry lost time accident database.

The data reported is collected from mine sites on an ongoing basis and via monthly and quarterly summaries. The dataset is usually not complete until well into the following financial year because mines often take considerable time to supply the data. An arbitrary cut-off, in order to begin data analysis, usually takes place in September each year when most of the data has been received. For this reason there will be minor changes in data reported in last year's report for the previous year because these data are updated with each new report.

Performance measures for individual mines in each sector are no longer reported in the *Queensland Mines and Quarries Safety Performance and Health Report*, instead they can be found on the DNRM website www.dnrm.qld.gov.au

1.1 Fatal injuries

The worst disaster in Queensland's mining history occurred on 19 September 1921, when 75 miners lost their lives in a coal dust explosion at Mount Mulligan in Far North Queensland. On 19 September 2008, the State Government initiated Miners Memorial Day. This day commemorates the lives of more than 1450 miners who have died in mining tragedies in Queensland. In 2011 the Miners Memorial Day Service was held at the Civic Centre in Mount Isa and was attended by hundreds of members of the local mining community.

There was one fatal injury in the mining industry in Queensland in 2011–12. This compares with three fatalities in 2010–11. Figure 1.1 shows the declining trend in mine fatalities since 1900, with major fatality events noted on the graph.

Figure 1.2 shows that the number of employees in the industry has steadily increased. The number of fatalities however, has decreased compared to 2010–11.

Coal mines

There were no fatal accidents in coal mines in 2011–12 compared with two fatalities in 2010–11.

Metalliferous mines and quarries

There was one fatal accident in the metalliferous mines and quarries sector in 2011–12 compared with one in 2010–11.

This accident occurred on 5 June 2012 when a quarry employee was fatally injured after becoming entangled in a conveyor.

1.2 Permanent incapacities

There were 28 permanent incapacities reported for 2011–12, compared to 57 permanent incapacities in 2010–11. The number of incapacities, the kind of mine or quarry site work from which they resulted, and the previous year's statistics are listed below:

- 16 from surface coal (40 in 2010–11)
- 3 from underground coal (10 in 2010–11)
- 3 from metalliferous surface (1 in 2010–11)
- 3 from metalliferous underground (1 in 2010–11)
- 3 from quarries (5 in 2010–11).

The Mines Inspectorate will continue highlighting the importance of reporting permanent incapacity injuries and illnesses. We need to have a complete record of all permanent incapacities occurring in the mining industry in Queensland so that we can monitor the hazards encountered in that industry. Table 1.1 details permanent incapacities reported by mines in 2011–12.

Under section 279 of the *Coal Mining Safety and Health Act 1999*, and under section 259 of the *Mining and Quarrying Safety and Health Act 1999*, the department may require mines to submit statistics or other information about the mining industry on an approved form. The approved forms for submitting these statistics are the Queensland Mining Industry Incident Report Form and the Queensland Mining Industry Monthly Incident Summary. The incident report form defines a permanent incapacity as any work-related injury or disease that leads to one or more of the following outcomes:

- the complete loss, or permanent loss of use, of any member or part of the body
- any permanent impairment of any member or part of the body, regardless of any pre-existing disability of that member or part
- any permanent impairment of physical/mental functioning, regardless of any pre-existing impaired physical or mental functioning
- a permanent transfer to a different job
- termination of employment.

Data extracted from the Queensland Employee Injury Database and supplied by the Queensland Office of Economic and Statistical Research (OESR), which includes data on all workers compensation cases in Queensland from WorkCover Queensland and the self-insurers, can be found in Chapter 8. However, it is not

Figure 1.1: Fatalities in Queensland mines, 1900–2012

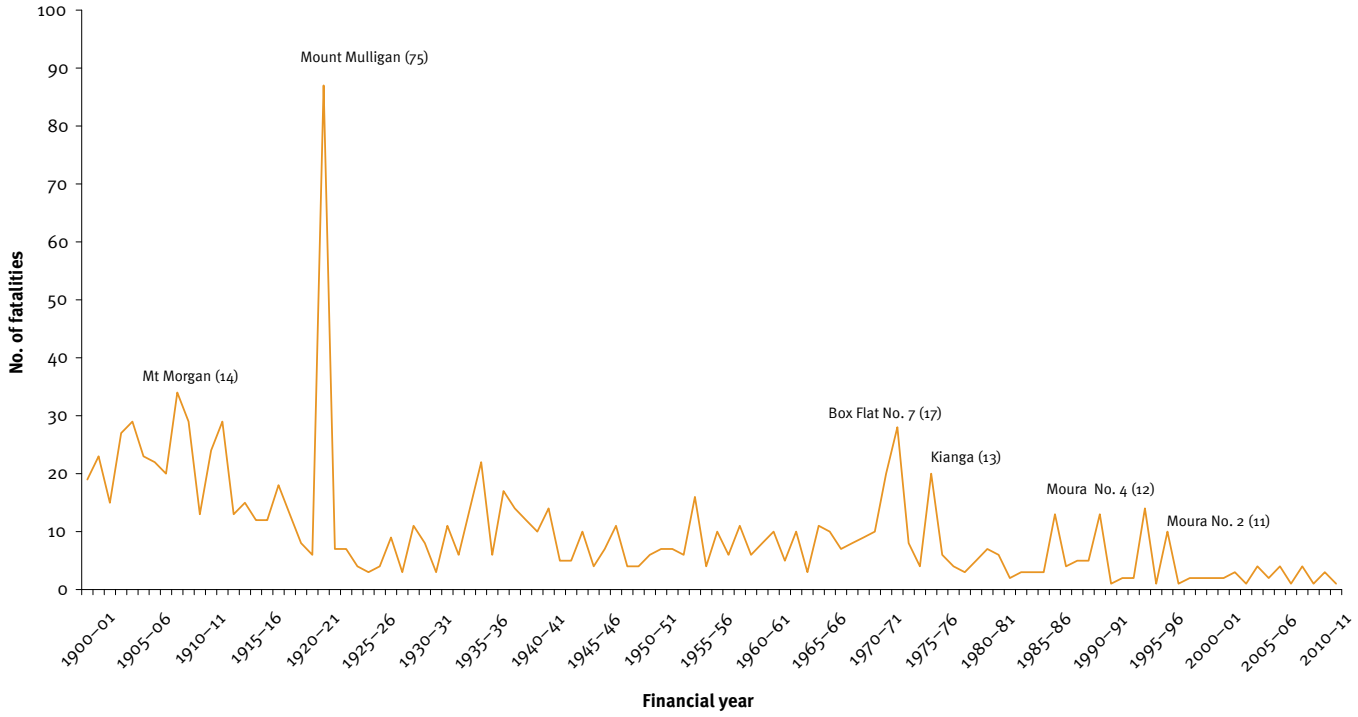
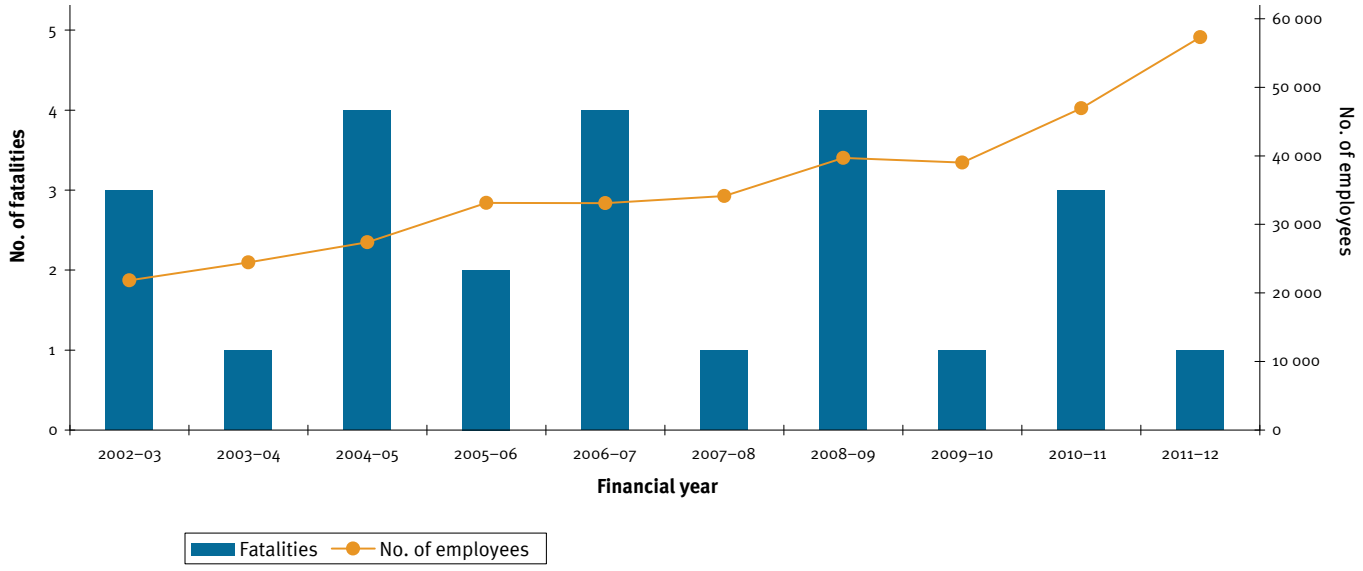


Figure 1.2: Employee numbers and fatallities (all sectors), 2002–12.



possible to determine which of the claims listed in Chapter 8 would have resulted in permanent incapacity, nor is it possible to determine which claims may be as a result of the injuries reported as permanent incapacities.

1.3 Lost time injuries and disabling injuries

Figures 1.3–1.5 show statistics for the lost time injury frequency rate (LTIFR), severity rate and duration rate over a 10-year period from 2002–12; they are produced as statistical process control charts to emphasise changes in trend over time.

Figure 1.8 illustrates how the number of LTIs and DIs in coal mines has increased recently in line with a steady increase in employment numbers. An increase in the number of injuries may have been expected, particularly given the increasing number of inexperienced personnel entering the mining industry.

Interestingly, Figure 1.9 shows that at metalliferous mines and quarries the number of LTIs and DIs has remained relatively steady in comparison to the rise in employee numbers over the 2002–12 period.

1.4 Significant incidents

A significant incident is one in which a worker or workers suffered, or could have suffered, a serious bodily injury. A

Table 1.1: Permanent incapacities reported by mines, 2011–12

Injury/Disease	Incapacity type	Incapacity description	Qty
Coal exploration			
Contusion with intact skin/crush	Upper limbs–hand/finger/thumb	Crush injury to driller's right hand small finger that required amputation	1
Coal surface			
Disorder of muscles/tendon/other soft tissue	Lower limbs–knee	Knee injury	1
Fracture (not vertebral column)	Upper limbs–wrist	Fractured scaphoid required surgery	1
Nerve/spinal cord injury	Trunk–back (upper/lower)	Degenerative back condition	1
Sprain/strain	Trunk–back (upper/lower)	Lower back injury	1
	Trunk–back (upper/lower)	Long-term back injury	1
	Neck	Neck joint condition	1
	Neck	Prolapsed intervertebral disc in cervical spine with referred pain, treated surgically by discectomy and fusion	1
	Unspecified locations		1
Traumatic amputation	Upper limbs–hand/finger/thumb	Finger amputation	2
Unspecified injury	Other/unspecified injury	Incapacity unknown	2
		Lower extremity injury other than in the table of injuries	1
		Injury other than in the table of injuries	1
		Moderate linear scarring following surgery or trauma crossing lines of election to any part(s) of the body	1
Coal underground			
Mental disorder	Psychological system	Psychological impairment	1
Sprain/strain	Trunk–back (upper/lower)	Prolapsed disc, lumbar spine surgery	1
Unspecified injury	Other/unspecified injury	Work related injury–unknown	1
Metalliferous surface			
Sprain/strain	Multiple locations	Neck and shoulder injury	1
Contusion with intact skin/crush	Upper limbs–hand/finger/thumb	Finger crush injury	2
Metalliferous underground			
Contusion with intact skin/crush	Lower limbs–leg	Contusion/crush–lower leg	1
Unspecified injury	Other/unspecified injury	Incapacity unknown	2
Quarries			
Sprain/strain	Upper limbs–neck and shoulder	Permanent neck and shoulder injury	1
	Upper limbs–shoulder	Shoulder injury	1
	Upper limbs–hand/finger/thumb	Finger crush injury	1
Total			**28**

Figure 1.3: Lost time injury frequency rate per month (all sectors), 2002–12

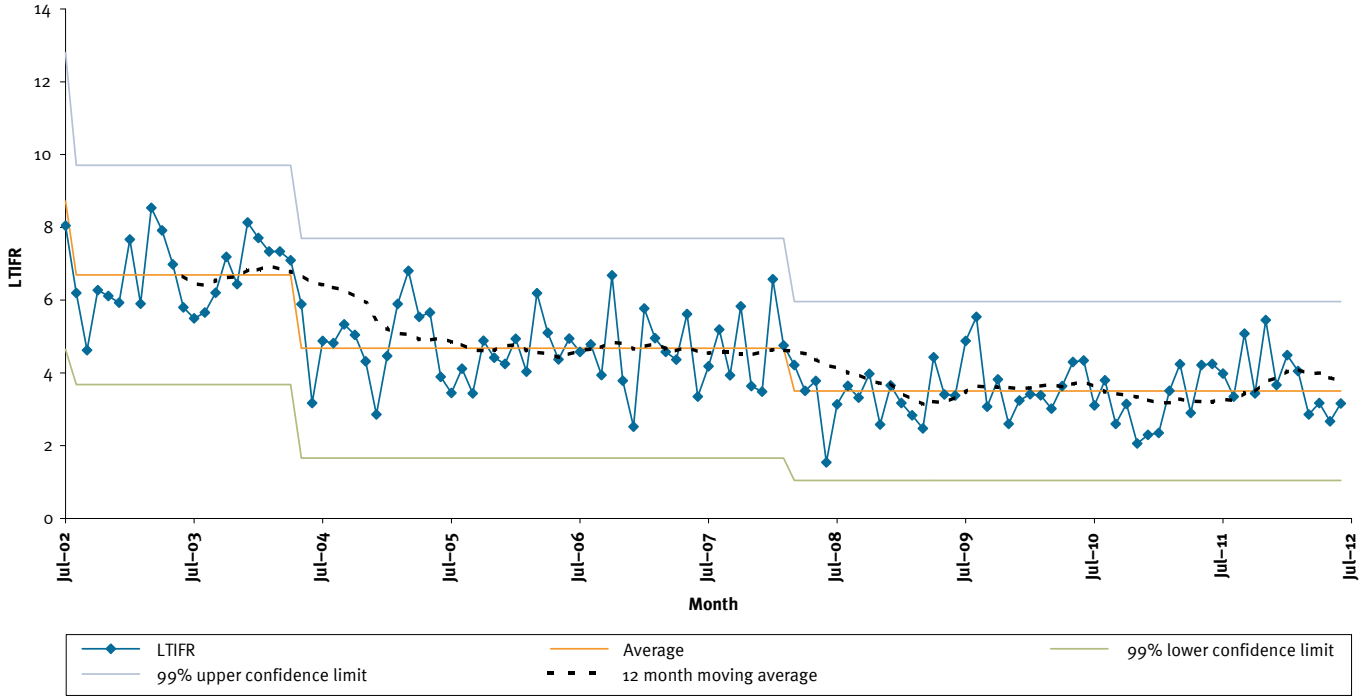


Figure 1.4: Severity rate per month (all sectors), 2002–12

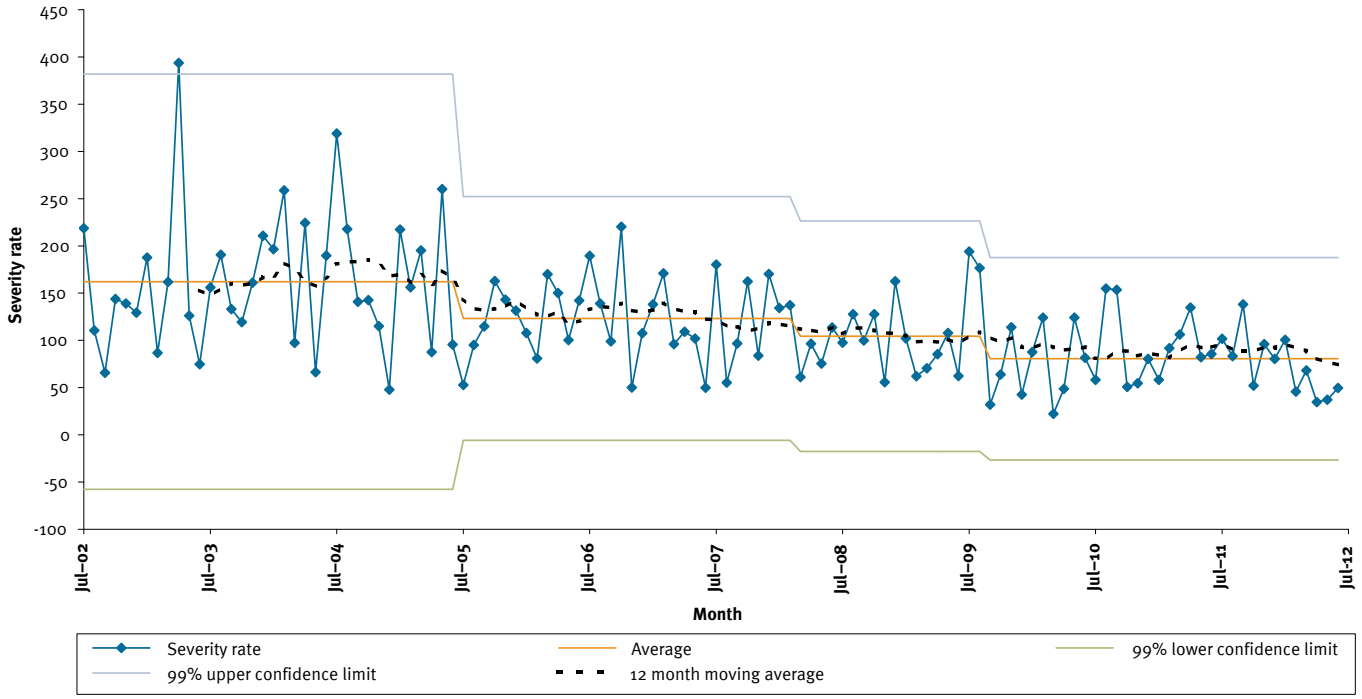


Figure 1.5: Duration rate per month (all sectors), 2002–12

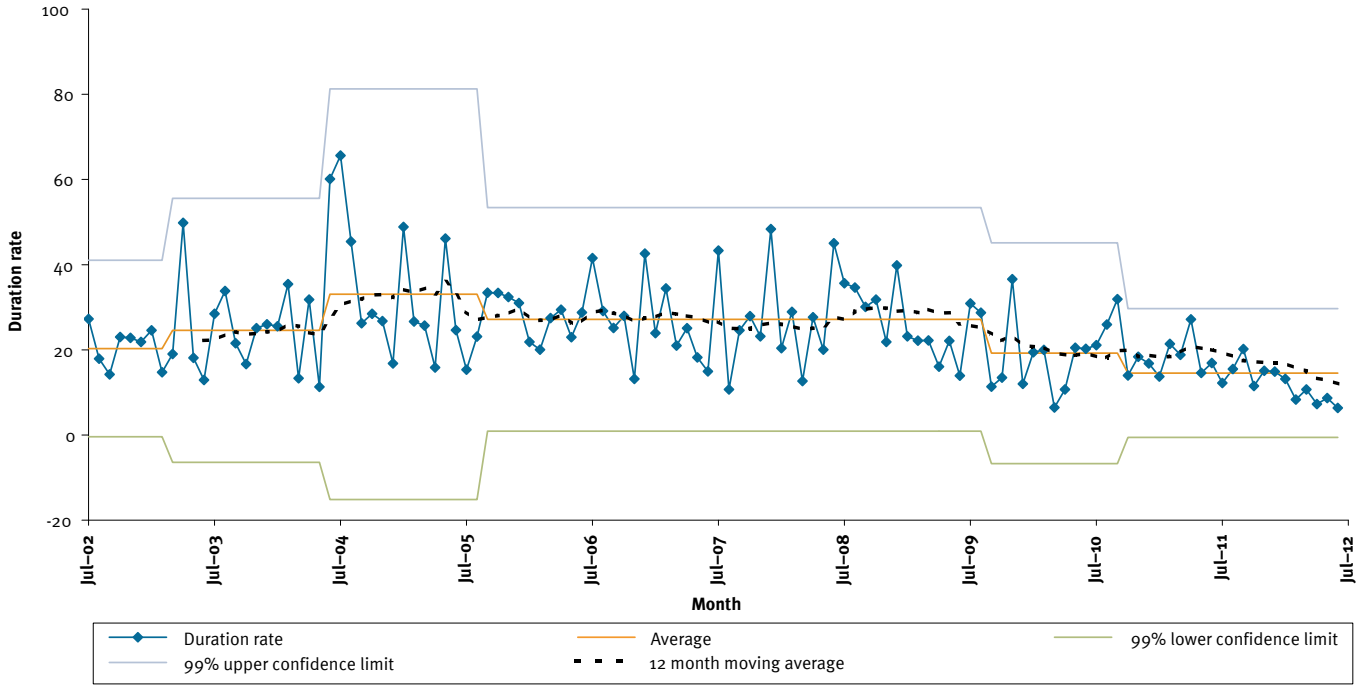


Figure 1.6: Lost time and disabling injury severity rate versus employment numbers (all sectors), 2002–12

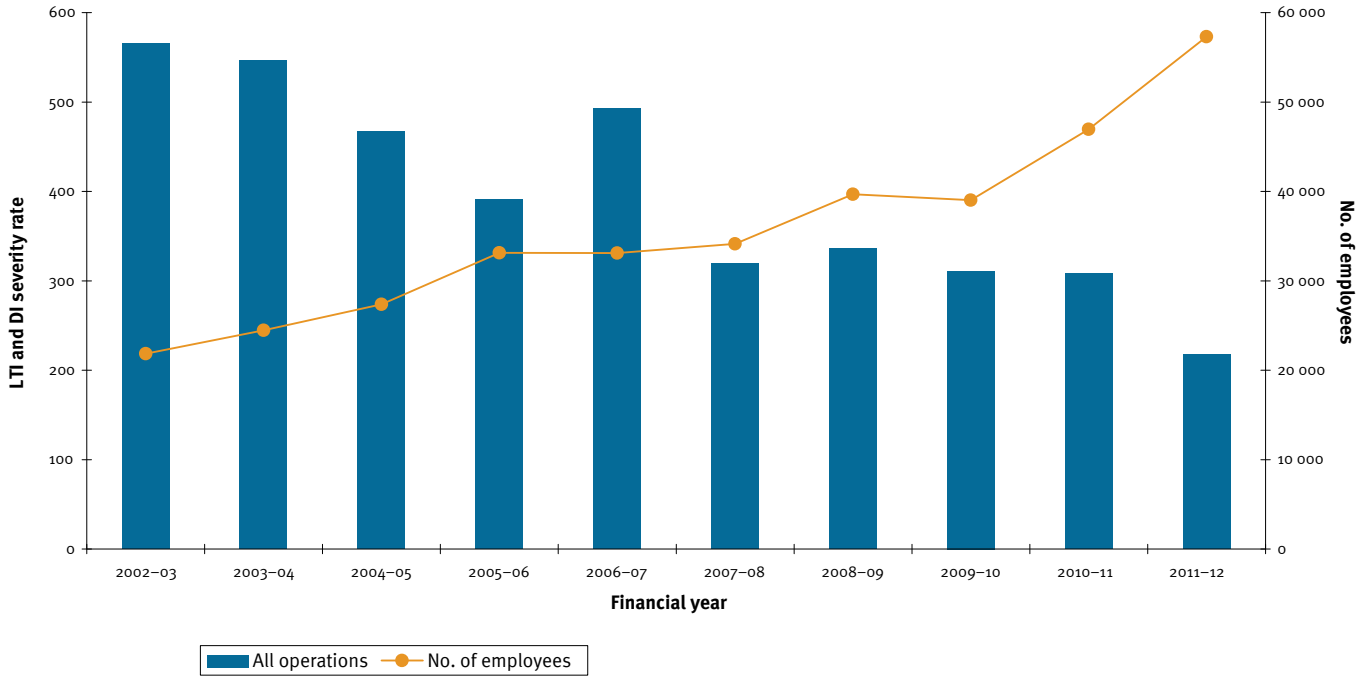


Figure 1.7: Lost time and disabling injury duration rate versus employment numbers (all sectors), 2002–12

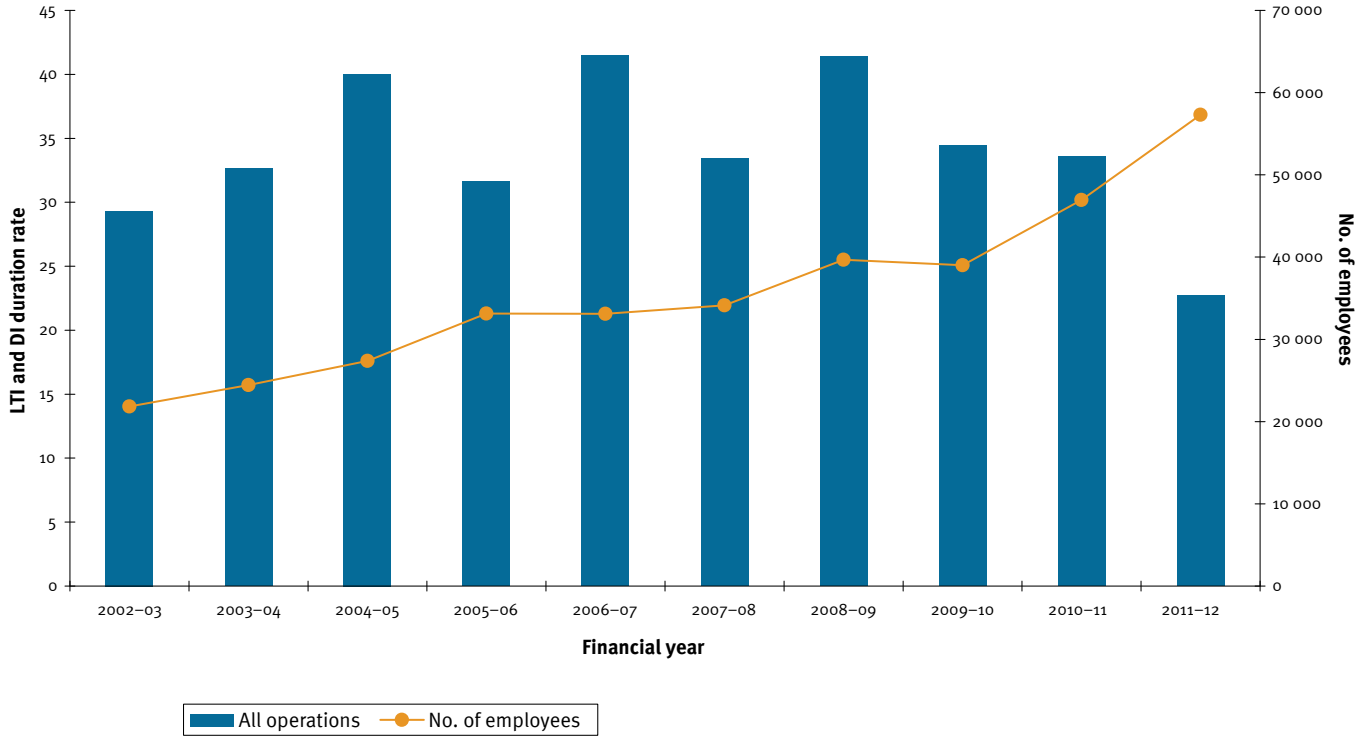


Figure 1.8: Lost time and disabling injuries versus employment numbers for coal mines, 2002–12

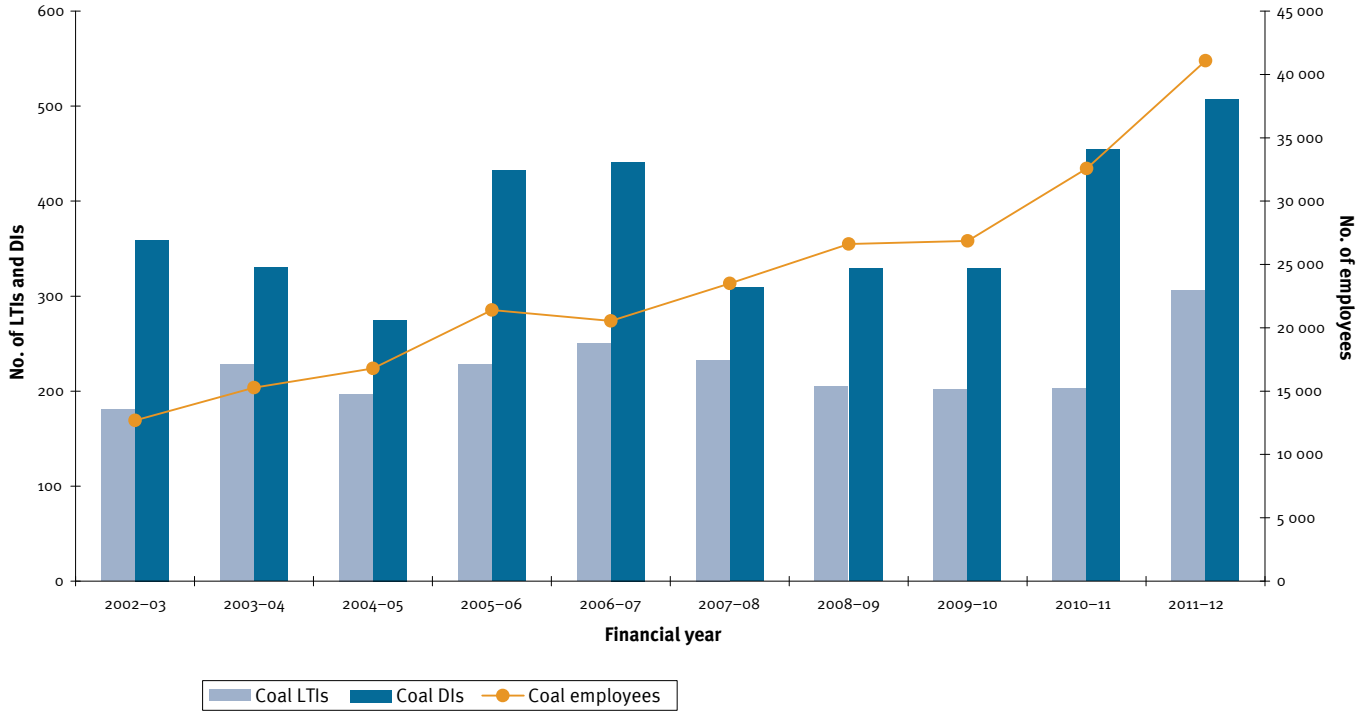
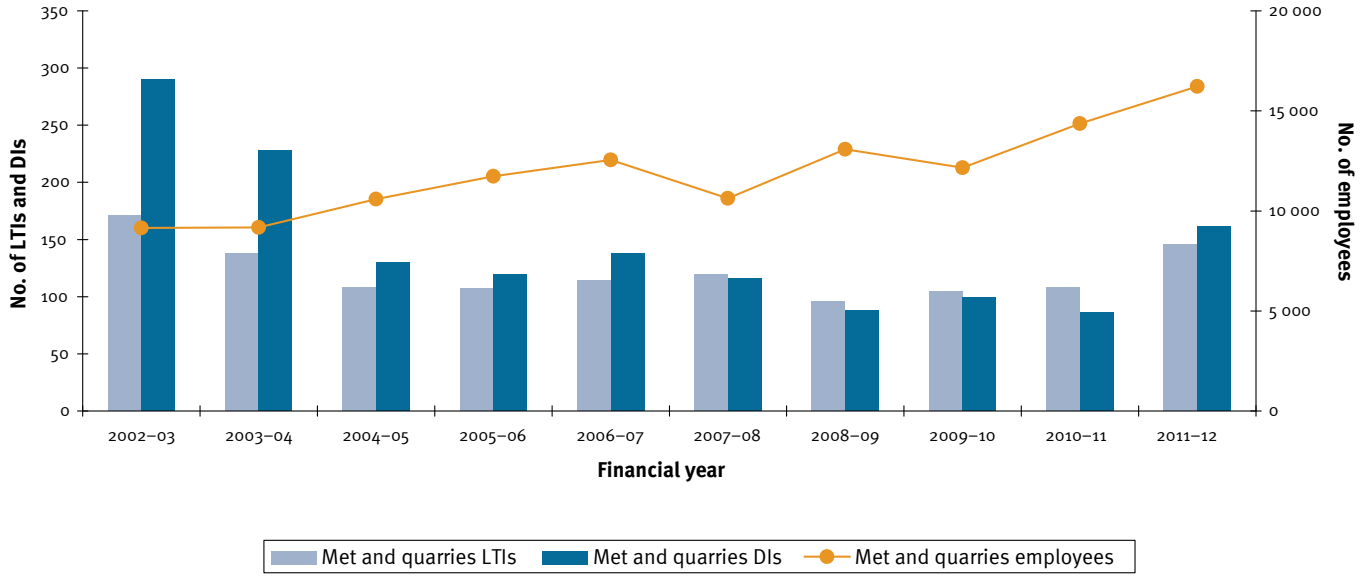


Figure 1.9: Lost time and disabling injuries versus employment numbers for metalliferous mines and quarries, 2002–12



serious bodily injury is defined as an injury endangering (or likely to endanger) life or causing (or likely to cause) a permanent injury to health.

The incidents described below have been selected from the lost time accident database and HPI database. They do not include all the significant incidents that occurred but are a representative sample of such incidents.

Coal mines

Throughout the year there were many fire-related incidents, most of them associated with vehicle engine bays and brakes. Often these involved oil (engine, transmission or hydraulic) spraying onto exhausts or engines.

There were also a number of vehicle incidents caused by driving at a speed faster than the conditions would permit, falling asleep at the wheel, mechanical failure, not obeying road rules, lack of communication or losing control on recently watered ground. There were also many heavy vehicle rollovers.

Significant incidents reported at coal mines this year include the examples listed below.

- An employee was erecting a platform designed to support a 415v transformer. During this task, the worker sustained severe injuries when he was crushed by the rear of the bucket while attempting to bolt a transformer support beam.
- While raising the platform on the driver's side of a continuous miner, a 5-foot drill steel became snagged on some chequer plate. As the platform rose, the drill steel moved striking a coal mine worker on the head, causing contusions of the ear and left jaw.
- A belly guard jack was not functioning correctly and as a mineworker attempted to correct the malfunction, the jack collapsed onto the employee's arm causing a severe crush injury.
- A truck driver fell asleep while driving a loaded truck and ran the truck into a light pole. The incident aggravated an existing condition in the driver who experienced minor back pain. The driver was taken to hospital for a check-up and released.
- An operator using an elevated work platform raised the basket so high it contacted the light fitting above. The dislodged light fell 12 m to the ground and landed close to three personnel.
- A 30 tonne excavator was on top of a 1.2 m coal bench when the left side of the bench gave way and the excavator fell over on its side.
- A dozer was being used to establish a dragline ramp; the work area was illuminated by the boom lights of a dragline. As the dozer was reversing along the bench, the machine slid off onto a completed section of the ramp, coming to rest on its left side. The operator shut down the machine and evacuated the dozer without injury.
- A timber jack being lowered via remote control contacted the top of a drill steel resting on a mineworker's work boot. The steel was pushed through the worker's right foot.
- With a drill string located in a hole, drillers lowered the mast to carry out hot work; a hot work permit was in place and a gas testing instrument was appropriately placed. During the grinding, sparks fell into a 125 mm floor gap and ignited seam gas. The gas burned itself out and there were no injuries.
- A dozer fell into a cavity on shot ground resulting in the operator suffering spinal injuries.
- A service technician injured his neck when the car he was driving became airborne after hitting a centre bund. The

mine has surveyed and photographed the scene: it is believed that speed was a contributing factor.
- While personnel were changing picks on a longwall shearer, a 100 kg block of coal fell near a mineworker.

Metalliferous mines and quarries

Light and heavy vehicle accidents during 2011–12 were due to one or more of these contributing factors: speed, mechanical failure, failure to obey road rules and loss of control on recently watered roads.

Significant incidents reported at metalliferous mines this year include the examples listed below:

- An excavator operator was repairing a silt pond wall when the boom of the excavator touched an 11 kV overhead power line, which tripped power to the plant. The operator was able to move the excavator away from the power line and then exit the machine.
- An operator was cleaning up a haul road with a dozer when the edge of the road slipped and the dozer leaned towards the dam. The operator called the supervisor for assistance and exited the dozer as the machine slowly sank down the bank and into the dam.
- A contractor received significant facial injuries while working on a mobile screening plant. It is believed that he was struck by a piece of flying metal.
- A fire on a light vehicle in an underground mine could not be extinguished immediately by the operator. An emergency was raised and 38 workers went to the emergency refuge chambers until the rescue team extinguished the fire and checked and restored normal ventilation.
- A worker climbing down a ladder slipped and fell approximately 1.5 m to the ground. He pulled the ladder with him and was believed to have been knocked unconscious and unable to raise the alarm for 40 minutes.
- A seismic event (magnitude 1.8), caused approximately 15 tonnes of rock to fall from the shoulder and back of a drive. A supervisor was injured by flying rocks and two light vehicles, parked in the drive, received minor damage.
- While driving up a decline, a haul truck operator had a microsleep and the truck hit a wall. Although the driver was not injured, there was significant damage to the vehicle (broken cab windows and structural damage).
- Approximately 1 tonne of copper plates overbalanced and fell off the weigh station, partially crushing an operator who was severely bruised.
- An employee became entangled in the upper roller of a conveyor gravity tension unit.
- A worker was struck on the side of his face by a crowbar he was using to unblock an operating jaw crusher. It fractured his lower jaw and broke some teeth.
- Workers were barring down off a scaffold stage in preparation for installing ground support. Rock falling from the back dismantled the staging causing two workers to fall to the ground among with the falling rock. One worker was seriously injured and the second bruised.
- A worker stepped through rotten grid mesh covering a drain containing sulphuric acid. The employee sustained serious acid burns to his foot and lower leg.
- At a quarry site, storm damaged high voltage lines fell onto the low voltage supply to the quarry causing a massive power surge. The surge damaged electrical equipment and started a small fire; no-one was hurt.

1.5 High potential incidents

An HPI is defined in mining legislation as an event, or series of events, that causes, or has the potential to cause, a significant adverse effect on the safety or health of a person. The identification of HPIs enables industry to implement proactive strategies for managing the identified risks before someone is injured.

The reporting of HPIs at mines and quarries is mandated by legislation because the ramifications of these incidents are often costly, both in human and commercial terms. It is therefore important that this data is collated and not lost. The publication of this collective data benefits industry by raising awareness of repeat incidents at mines so that corrective action can be taken. An effective incident-reporting system also indicates a mature industry that takes the safety of its workers seriously.

Periodic summaries of reported HPIs—in the form of general incident descriptions and quarterly year-to-date graphs—are emailed to mines. Graphical breakdowns and statistics on HPIs by mining sector are available on DNRM's website www.dnrm.qld.gov.au

As shown in Figure 1.10, by 2006–07, the number of HPIs had steadily increased in line with the increase in the number of employees in the industry. However, even with this growth, the number of reported incidents dropped in the 2007–09 period. Over the most recent three years, 2009–12, the reporting of HPIs has increased. The industry is to be commended on the increased compliance in reporting of HPIs.

Table 1.2 shows that the number of HPIs reported per 1000 workers across sectors decreased slightly in 2011–12 compared with 2010–11. However the metalliferous and quarry sectors saw a slight increase in reporting . This table also shows the number of improvement actions per 1000 workers arising from investigations of HPIs.

Figure 1.10: Employee numbers and high potential incidents (all sectors), 2002–12

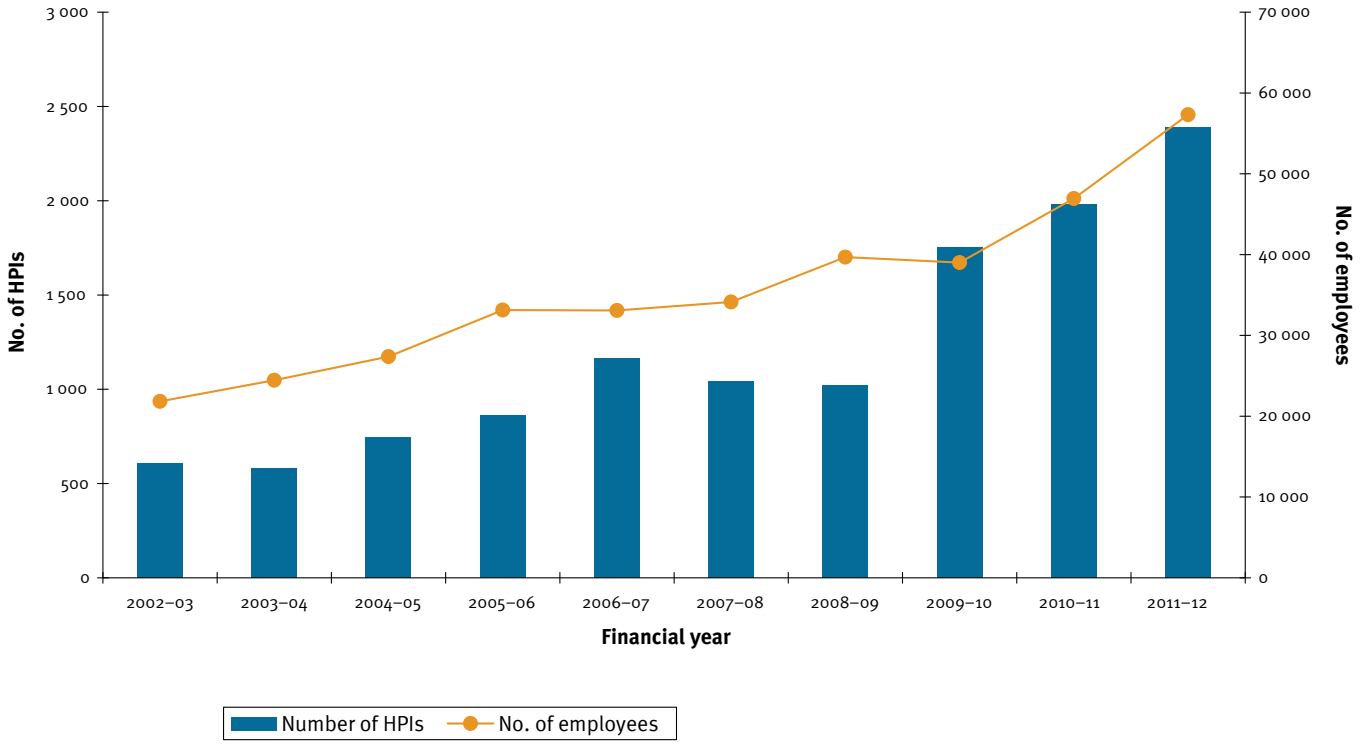


Table 1.2: Comparison of high potential incident-reporting across sectors, 2008–12

	High potential incidents per 1000 workers				Improvement actions resulting from HPI investigations per 1000 workers			
	2008–09	**2009–10**	**2010–11**	**2011–12**	**2008–09**	**2009–10**	**2010–11**	**2011–12**
Coal–surface	30	44	47	41	•	•	•	•
Coal–underground	16	79	54	52	•	•	•	•
All coal	**27**	**50**	**48**	**43**	**96**	**95**	**73**	**87**
Metalliferous–surface	18	32	24	36	•	•	•	•
Metalliferous–underground	29	29	31	35	•	•	•	•
All metalliferous	**23**	**31**	**27**	**36**	**114**	**251**	**88**	**75**
Quarries	23	55	50	55	151	278	94	86
All sectors	**26**	**45**	**42**	**42**	**103**	**132**	**78**	**84**

• = Surface and underground break-up not available

Figure 1.11 outlines the number of HPIs per type of incident. The five most common categories of HPIs, according to the number of reported incidents in 2011–12, are listed below:

1. loss of control/unplanned movement
2. fire
3. electrical
4. vehicle
5. mobile plant.

Multiple safety alerts and bulletins have recently been issued in relation to these hazards (see Table 1.3). Further information on these and other HPIs is available from the DNRM website www.dnrm.qld.gov.au

Figures 1.12–1.16 illustrate each reported HPI type as a percentage of the total HPIs in each mining sector.

Figure 1.11: High potential incidents in the Queensland mining industry 2009–12

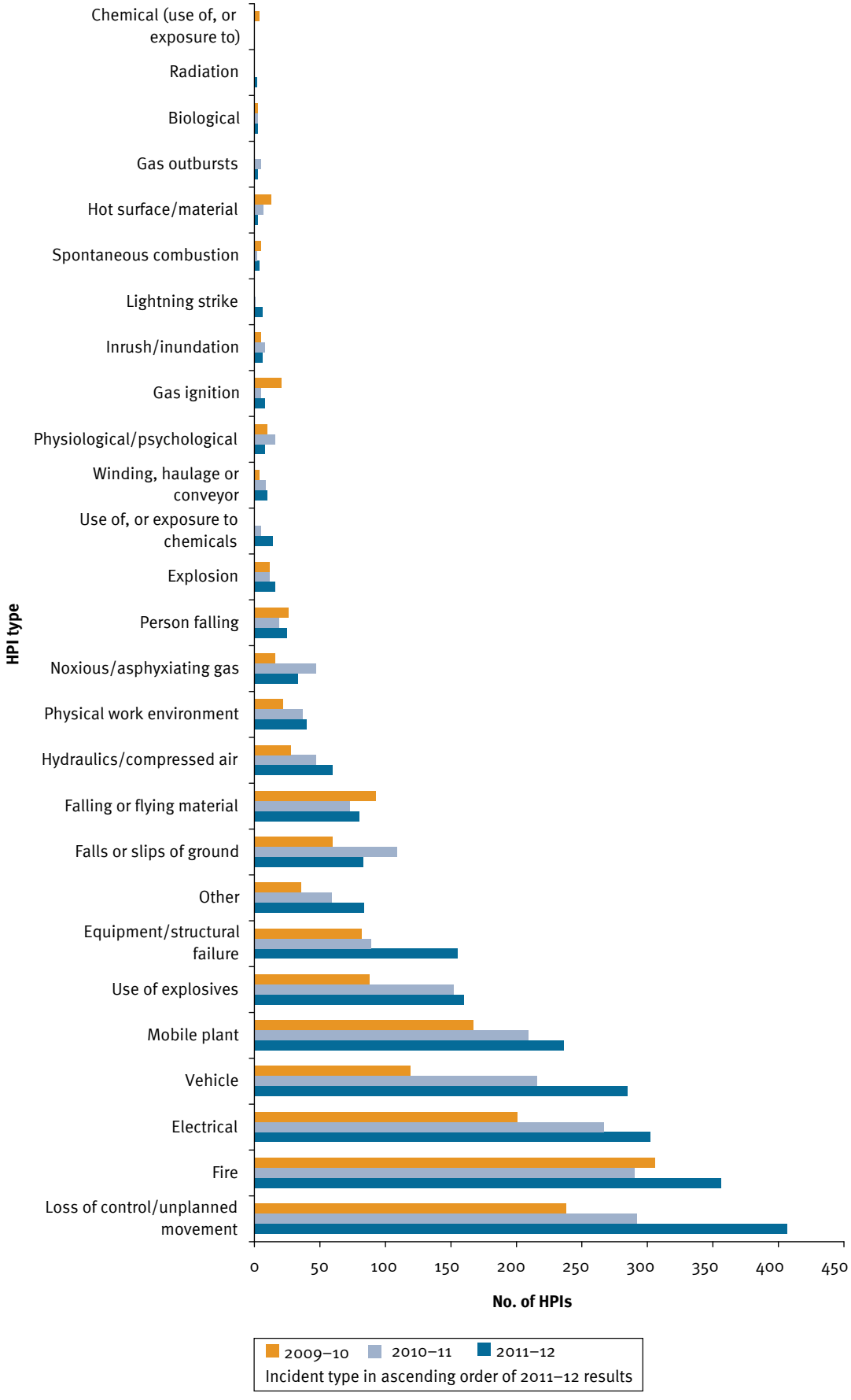


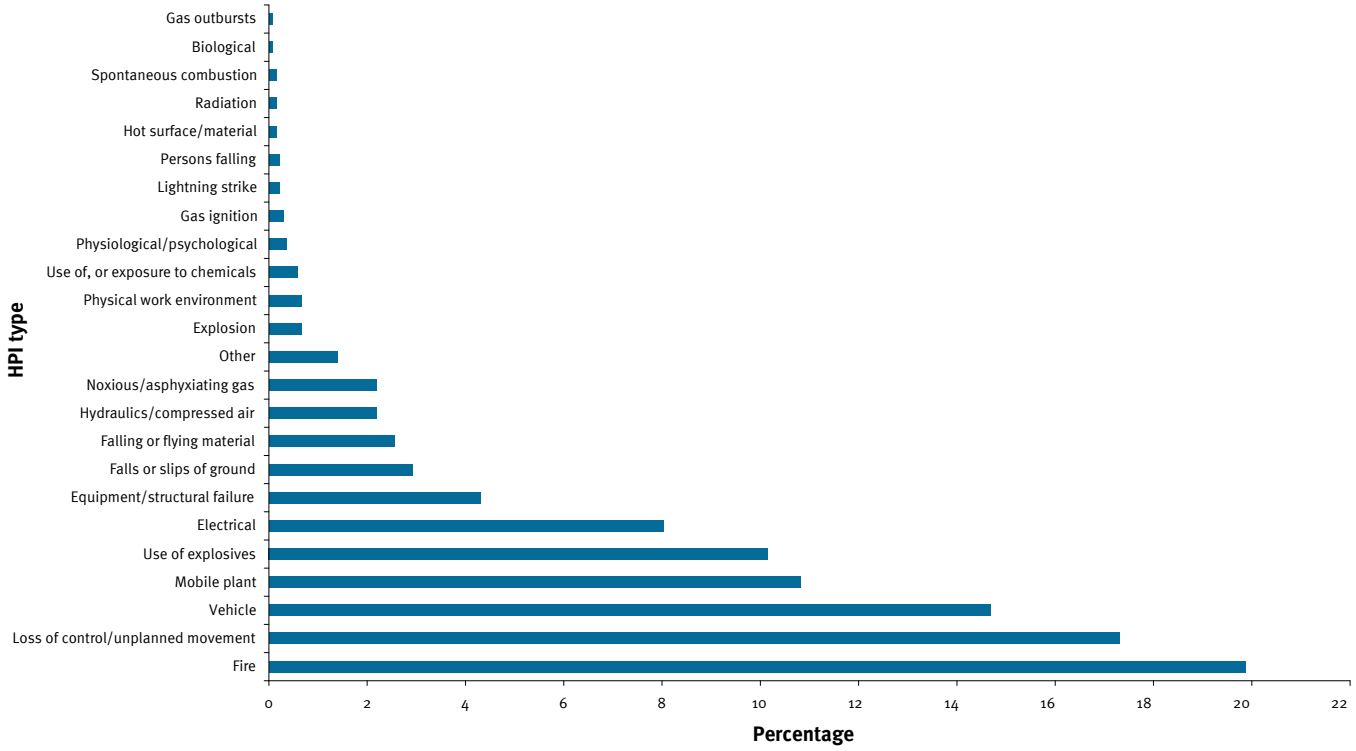
Table 1.3: Safety alerts and bulletins relating to high potential incidents, 2011–12

Loss of control/unplanned movement	
Safety Alert No. 276	Articulated dump truck rollover
Safety Alert No. 279	Park safely to prevent uncontrolled vehicle movement
Hydraulics/compressed air	
Safety Alert No. 271	Longwall fluid-injection injury
Safety Alert No. 273	Hydraulic hoses fail on excavator booms
Explosion	
Safety Alert No. 280	Emergency refuge bay explosion
Winding, haulage or conveyor	
Safety Alert No. 291	Fatality on a mine site
Physiological/psychological	
Safety Alert No. 285	Inappropriate use of pre-workout supplements
Safety Bulletin No. 111	Health risks of smoking synthetic cannabinoids
Falling or flying material	
Safety Alert No. 286	Coal mine worker hit by loose discharge hose
Biological	
Safety Alert No. 281	Fire ants found in mining equipment in Roma
Gas ignition	
Safety Alert No. 272	Ignition on the surface at a seam borehole
Vehicle	
Office of the Commissioner for Mine Safety and Health No. 2	Proximity-detection systems—selecting the right one for your mine site
Safety Alert No. 275	Tyre air-blast catches three maintenance personnel
Safety Bulletin No. 118	Working safely with tyres: highway-style trailer haulage
Safety Bulletin 119	Explosion-protected diesel engine system standard updated
Chemical (use of, or exposure to)	
Safety Alert No. 284	Severe acid burns to foot as drain collapses
Physical work environment	
Office of the Commissioner for Mine Safety and Health No. 3	Rail corridors on coal mine sites
Safety Bulletin No. 112	Mine road safety
Safety Bulletin No. 114	Storm season is coming—be prepared
Safety Bulletin No. 115	Risk management of heat exposure in mining
Equipment/structural failure	
Safety Alert No. 274	Rear boom arm pivot failure on load haul dump unit
Safety Alert No. 282	Catastrophic structural failure of excavator boom
Safety Alert No. 283	Screenbox flywheel failures on Powerscreeen® Chieftain 2-deck screening plants
Safety Alert No. 287	Alloy rim cracking and failure
Safety Bulletin No. 117	Pressure build-up in silos
Fire	
Safety Bulletin No. 113	Equipment fires, investigation and response

High potential incidents—surface coal mines

The total number of surface coal mine HPIs reported increased from 1228 in 2010–11 to 1380 in 2011–12. Fire was once again the highest contributing HPI type for surface coal at 19.9% in 2011–12 compared to 19.2% in 2010–11. Loss of control/unplanned movement was the second most-reported incident with a slight increase from 15.8% in 2010–11 to 17.3% in 2011–12. Vehicle incidents were the third most-reported with a small increase from 12.4% in 2010–11 to 14.7% in 2011–12. (See Figure 1.12.)

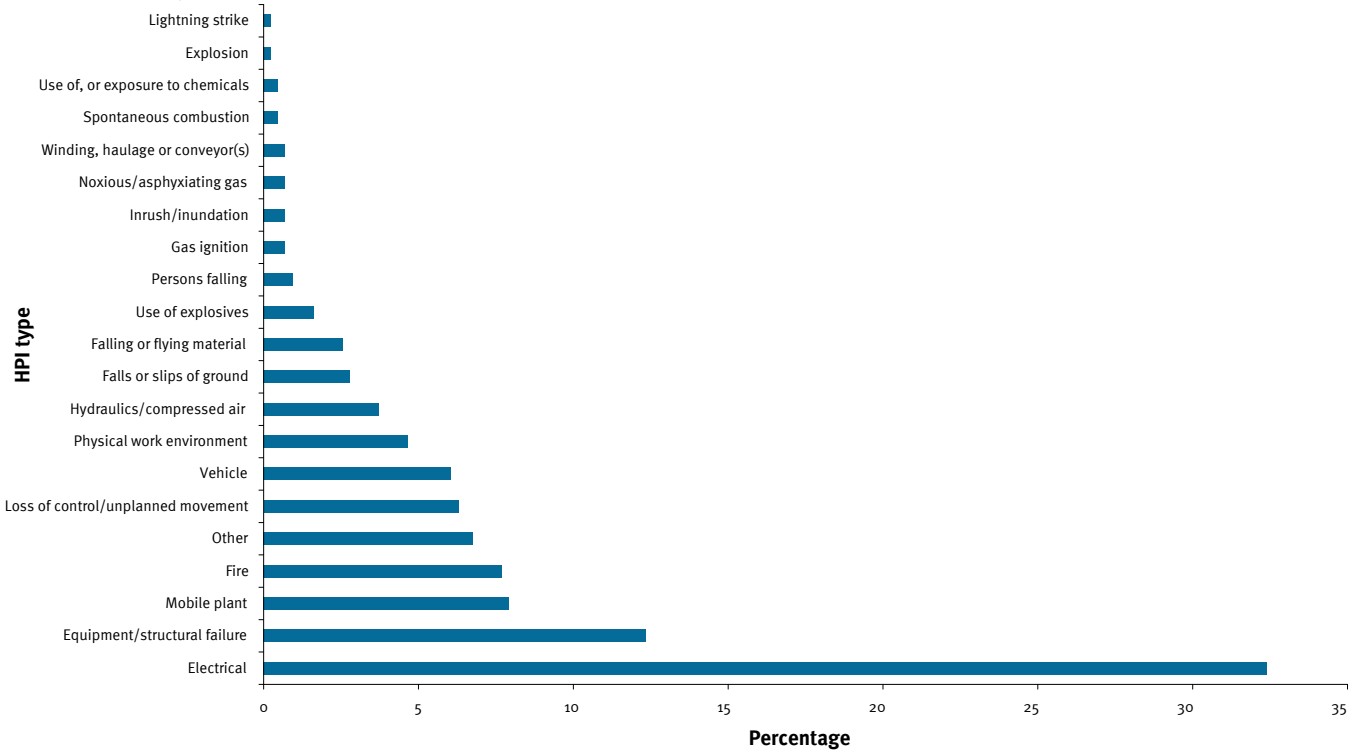
Figure 1.12: High potential incidents at surface coal mines, 2011–12



High potential incidents—underground coal mines

The total number of underground coal mine HPIs reported increased from 338 in 2010–11 to 398 in 2011–12. The percentage of electrical incidents increased from 24.3% in 2010–11 to 32.4% in 2011–12 and remained the most commonly reported HPI in underground coal mines. Equipment/structural failure was the second most-reported HPI increasing from 6.2% in 2010–11 to 12.4% in 2011–12. The third most-reported HPI was related to mobile plant, which decreased from 10.9% in 2010–11 to 7.9% in 2011–12. Fire, the fourth highest-reported HPI, showed a significant increase from 4.1% in 2010–11 to 7.7% in 2011–12. (See Figure 1.13.)

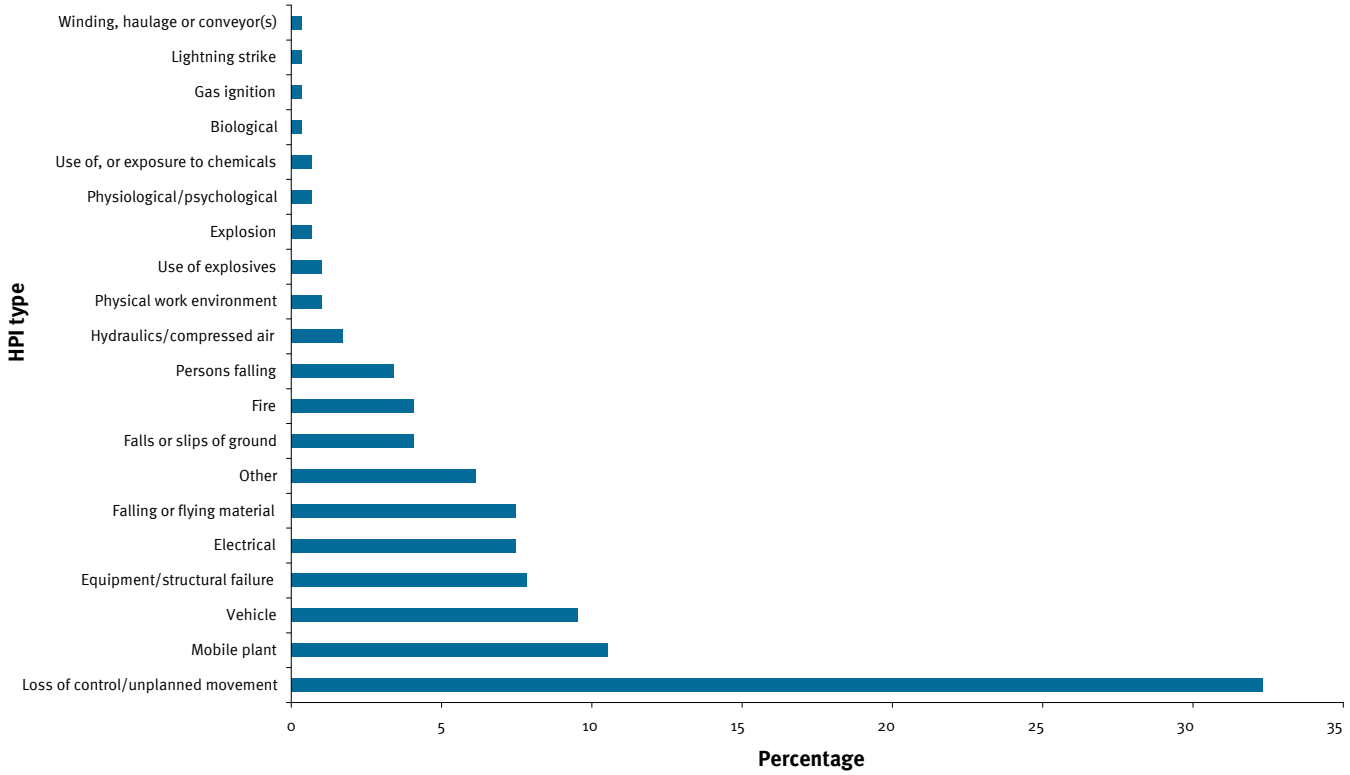
Figure 1.13: High potential incidents at underground coal mines, 2011–12



High potential incidents—surface metalliferous mines

The total number of surface metalliferous mine HPIs reported increased from 183 in 2010–11 to 302 in 2011–12. Loss of control/unplanned movement was the most commonly reported HPI in metalliferous surface mines, substantially increasing from 23.0% in 2010–11 to 32.3% in 2011–12. Incidents related to mobile plant were the second most commonly reported HPI, with an increase from 7.1% in 2010–11 to 10.5% in 2011–12. Vehicle incidents were the third highest HPI reported, increasing from 7.7% in 2010–11 to 9.5% in 2011–12. Electrical HPIs dropped from the second most commonly reported HPI in 2010–11 (14.8%) to fifth position in 2011–12 (7.5%).

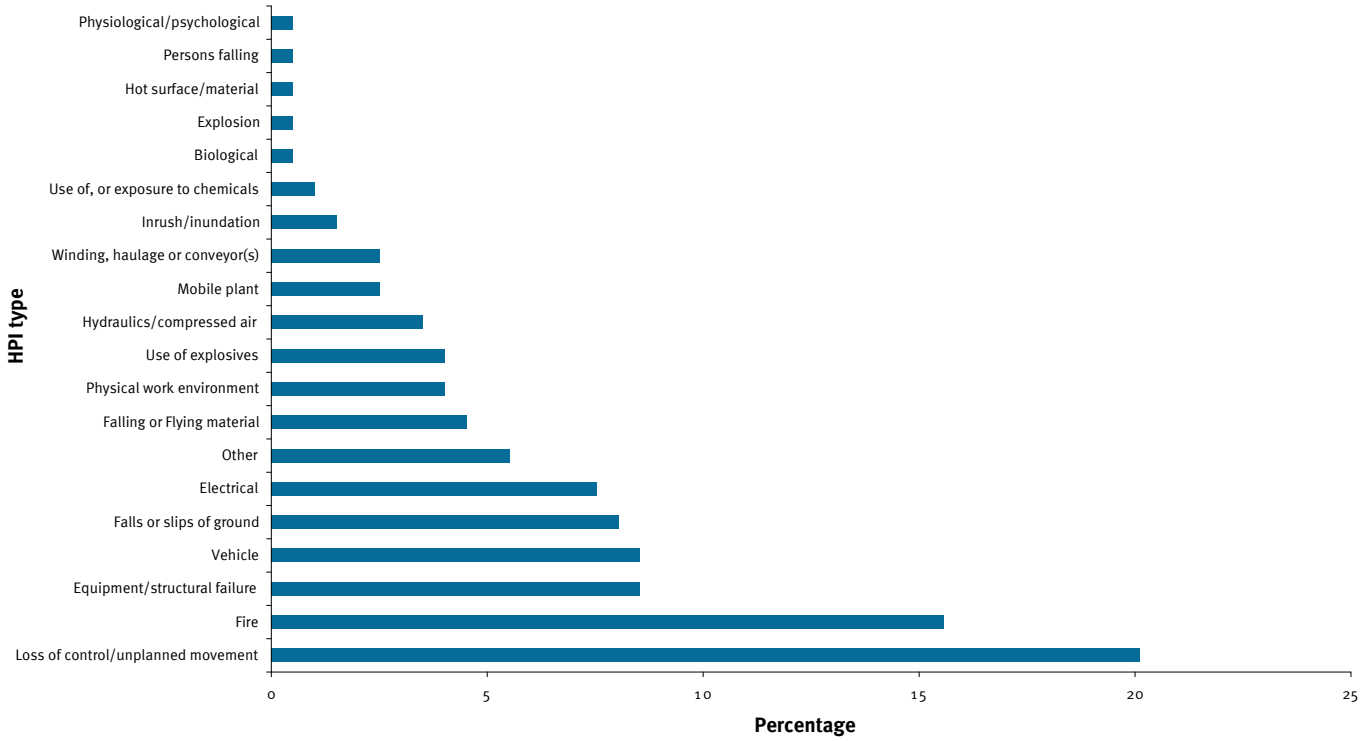
Figure 1.14: High potential incidents at surface metalliferous mines, 2011–12



High potential incidents—underground metalliferous mines

The total number of underground metalliferous mine HPIs reported increased from 162 in 2010–11 to 216 in 2011–12. Loss of control/unplanned movement rose from 14.2% to 20.1% to become the most reported incident. Fire incidents remained common at 15.6% compared with 16.0% in 2010–11. Equipment/structural failure HPIs nearly doubled from 4.3% in 2010–11 to 8.5% in 2011–12, but falls or slips of ground HPIs decreased significantly from 13.0% to 8.0%.

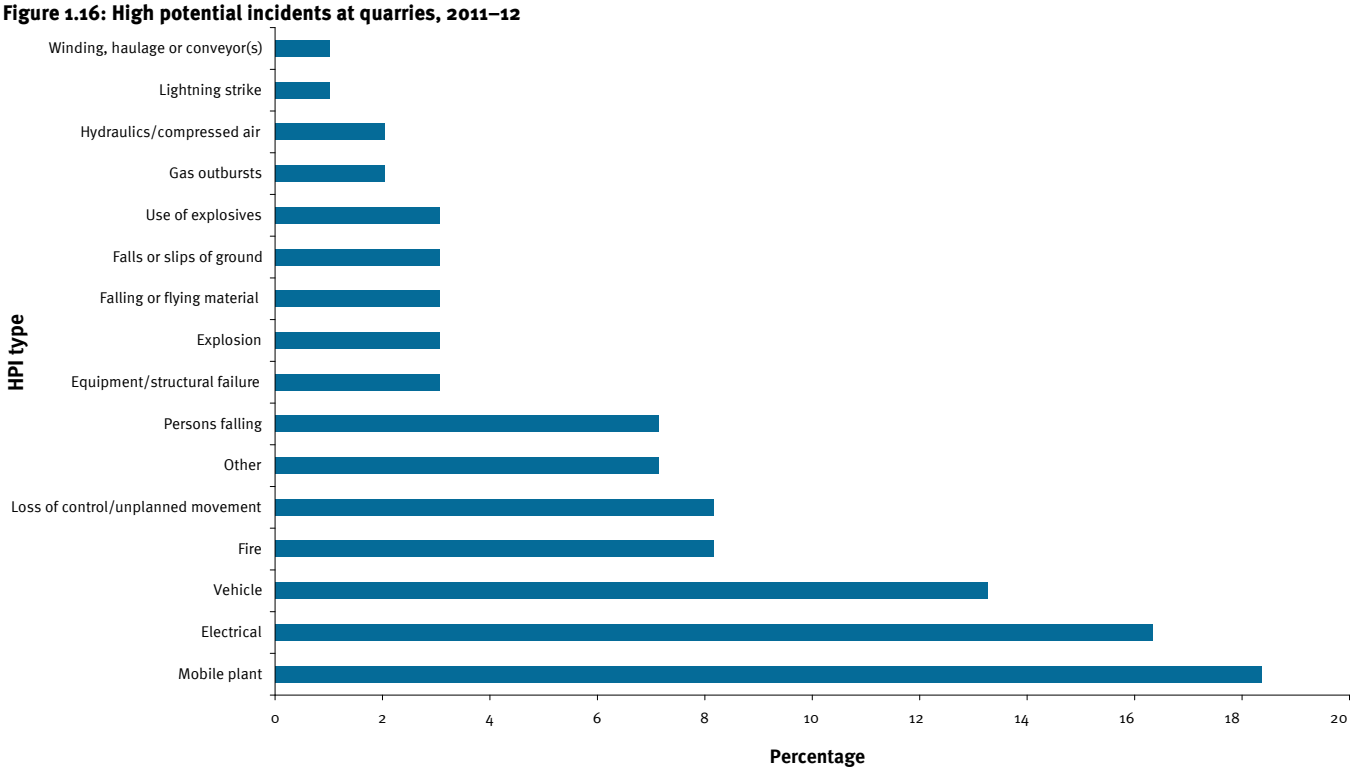
Figure 1.15: High potential incidents at underground metalliferous mines, 2011–12



High potential incidents—quarries

The total number of quarrying HPIs reported increased from 68 in 2010–11 to 94 in 2011–12. Mobile plant incidents were the highest reported HPI at 18.4%, down slightly from 19.1% in 2010–11. Electrical HPIs rose sharply from 7.4% last year to 16.3% in 2011–12. Vehicle-related HPIs fell from 20.6% in 2010–11 to 13.3% in 2011–12; fire incidents were the fourth highest, rising from 2.9% last year to 8.2% in 2011–12.

Figure 1.16: High potential incidents at quarries, 2011–12



Open-cut mining
Photo: Queensland Government Image Library

1.6 Queensland Level 1 Mine Emergency Exercise 2011

The executive summary from the 2011 Level 1 Mine Emergency Exercise report is given below. The full report is available on the DNRM website www.dnrm.qld.gov.au

Summary

The 2011 Level 1 Mine Emergency Exercise was held at Aquila underground coal mine on Tuesday 18 October, between mid-morning and 1600 hours. The Aquila Mine is 35 km south-west of Middlemount, in Central Queensland.

Scope

The exercise planned to test the Aquila Mine Emergency Evacuation Plan and the Aquila Mine Emergency Management Plan, focusing on internal and external resourcing and the incident control system, and other related matters. The following categories of the plan were tested:

Activation – informing relevant people of the situation

Evacuation – arranging for those at risk to move to a safe place

Response – taking remedial action

Incident management – the processes and systems used to deal with the event.

Scenario

The scenario was that three members of a production crew were trapped inbye of a roof-fall. One of the miners was seriously injured so a medical emergency also existed.

In addition to the roof-fall, mineworkers had to contend with the failure of the main fan (45 minutes after the roof-fall) and a surface grass fire (60 minutes after the roof-fall), which broke out when hot material from the failed transformer on the power pole fell into grass.

Outcomes

Miners on the outbye side enacted their first-action response plan, and assisted their trapped colleagues. They used resources from the emergency pod until they were directed by others to leave the mine because a condition of danger had been declared relating to a surface grass fire. This meant that the trapped miners had to dig their own way out.

Participating coal mineworkers from the underground mine, the adjacent surface mine, and the surface mines rescue team demonstrated a high level of commitment and competence. They acted to improve the situation, and to manage risks. They ultimately put out the grass fire and reinstated power to the main surface fan.

The decision-making and control of the IMT and frontline leadership would have been improved by:

- better understanding of context and purpose
- analysis of the situation
- risk assessment and implementation of control measures.

The outcome was that the miners remained trapped for longer than they need have been and the best available medical attention was not provided to the injured person at the scene. Two of the trapped miners dug their own way out and began to use the emergency apparatus to remove rock from their injured colleague. Assistance eventually arrived and all three miners were aided from the mine.

The mine operator provided an effective level of support including regular communications with the media and affected family members. Aquila Mine demonstrated a mines rescue capability and the Queensland Mines Rescue Service ultimately assisted in the safe extraction of the trapped mineworkers. Its decision-making tools to evaluate whether it was safe to re-enter the mine proved effective.

Recommendations

The report makes 10 recommendations for further improvement:

Recommendation 1: That underground coal mines review their safety and health management system to identify provisions that reduce risk and support decision-making during an emergency (resources to be provided as appropriate). Provisions could include:

- closed-circuit video cameras at strategic locations, e.g. in-pit areas of highwalls or ventilation intakes and exhausts
- reliable and relevant communication systems (e.g. surface two-way radio systems) that are made available to relevant duty-card holders
- continuous gas monitoring at strategic locations on the surface of the mine (e.g. in-pit areas of highwalls or ventilation intakes of the mine)
- handheld gas detectors for portal sentries in relevant scenarios
- suitable resources in the emergency pod
- compressed air breathing apparatus (CABA) as an alternative to self-contained self-rescuers (SCSRs) to improve verbal communication.

Recommendation 2: That mines review their first-action response plans (FARPs) to ensure they:

- take into account the time it can take for the Queensland Mines Rescue Service (QMRS) to mobilise underground
- provide mechanisms to keep entrapped miners informed about what is going on.

Recommendation 3: That mines physically test the controls identified in FARPs (e.g. the availability of equipment to move emergency pods to location and set props).

Recommendation 4: That underground coal mines review their procedures for dealing with the failure of the main surface fan. The mine should ensure that the ventilation system is capable of being reinstalled promptly and safely whenever power to the main surface fan fails. The SOP to enact that process should identify the availability of resources and procedure to reinstate power.

Recommendation 5: That underground coal mines review their training needs analysis for emergency first-response protocols. Practical training and assessment should ensure that mineworkers have a sound understanding of:

- first-action response plans
- the safety and health effects of mine gases
- non-verbal communication protocols
- use of airbags.

Recommendation 6: That the QMRS review the resource requirements of mines rescue substations. Improvements in planning, logistics and communication processes once on-site should be identified and provided. (Resources include such things as whiteboards, computer access, projectors, and processes to improve record-keeping associated with tracking resources including the location of its members at any time.)

Recommendation 7: That the QMRS implements an activation system that identifies the current competencies of team members against the requirements of an emergency. (Members out of 'oxygen time', for example, may not be able to go underground but can still be an appropriate resource elsewhere.)

Recommendation 8: That explosion risk zone controllers, incident management team members, control room operators and the surface mine gatehouse operators be included in scheduled training exercises (Recognised Standard 8), and have their competencies to perform in their defined roles validated. The following performance effectiveness outcomes for IMT members are relevant:

- analysing a situation, establishing the context and purpose, and managing by objectives
- developing strategies and action plans that reduce risk and make positive interventions during an emergency
- establishing priorities and issuing duty cards in accordance with the available resources and escalation processes
- summoning assistance
- identifying the need to debrief relevant personnel.

Recommendation 9: That underground coal mines ensure that their duty-card system provides for:

- prompting the person issuing the duty card to provide instruction in the context and purpose of the role depending on the scenario. (Simple work instructions aligned to the objective of the role or an explanation of the context and purpose of the role should be incorporated in the duty card. Furthermore, the person fulfilling the role of surface security, for example, should be trained to deal appropriately with a distressed family member, or be supervised in doing so.)
- prompting stakeholders to follow predefined procedures
- the call-out of resources and notification of external agencies
- the need for prompt, formal debrief of witnesses and transfer of this information to IMT and other key officials
- the number, content and point of issue of IMT and EMT (executive management team) duty cards as appropriate
- the use of available statutory emergency plans
- adequate resources to perform each role, e.g. communications, log sheets, radios, gas detectors (as appropriate).

Recommendation 10: That underground mines ensure effective procedures for identifying who is underground at any time.

1.7 Diesel Particulate Matter Committee

The Diesel Particulate Matter (DPM) Committee was formed to oversee health and safety issues relating to use of diesel equipment in the coal mining industry in Queensland, particularly in underground coal mines. The committee has been running in its current format since 2007 and meets approximately quarterly. The committee includes representatives from industry, the Mines Inspectorate and relevant industry consultants.

The DPM Committee met three times in 2011–12. These meetings were held on 28 September 2011, 17 February 2012 and 16 May 2012.

Although the committee has been in operation for several years, there is a high level of interest and enthusiasm; this is shown by up to 30 attendees at each meeting.

The major activities of the committee in 2011–2012 are listed below:

- The subcommittee completed the guideline for the management of diesel particulates in Queensland underground coal mines. This guideline has begun its journey to conversion into a Code of Practice on Diesel Particulate Management.
- The committee began disseminating information on the recently published training modules for diesel fitters. A suite of seven modules cover the overhaul and maintenance of diesel engines, including 'Code D' major overhaul in accordance with Australian Standard AS/NZS 3584.3.
- On behalf of the committee, a mine trialled different exhaust filter construction, such as fibreglass, to gain higher filtration efficiencies and lower maintenance costs.
- On behalf of the committee, a mine trialled new cleaning systems for the exhaust plate-type flame traps and water-based conditioner tanks. The trials included methods for reduced handling of highly caustic chemicals and improved disposal of contaminated cleaning water.
- The testing of heavy vehicle and personnel transporters continued throughout the year, examining the effect of engine timing and fuel load on exhaust gas and particulate emissions. This long-running testing program is part of an exhaust pollutant strategy to provide cleaner air for miners.

In June 2012 the International Agency for Research on Cancer, part of the World Health Organisation, classified diesel engine exhaust as carcinogenic to humans (Group 1). As the declaration will increase community awareness, greater control of diesel exhaust emissions will be needed.

1.8 Health Improvement and Awareness Committee

The Queensland mining Health Improvement and Awareness Committee (HIAC) was established to assist industry to anticipate, identify, evaluate and control health hazards in the mining environment. It is a tripartite committee with representatives from the Australian Workers Union (AWU), the Construction, Forestry, Mining and Energy Union (CFMEU), the coal and metalliferous industries, the quarrying and cement industry, the Queensland Resources Council (QRC) and the department's Safety and Health Group. The committee met in Brisbane on 23 November 2011, 21 March 2012 and 20 June 2012.

The major activities of HIAC are listed below.

- Nominations for industry, union and government representatives on the committee were received and voted on at the meeting (2-yearly membership nominations). A review of the strategic plan and terms of reference were also carried out for the next 2 year period. Introduction of observers to meetings was implemented.
- A committee meeting discussed Berlin Data from the Coal Mine Workers' Health Scheme, an update on the progress of National Mine Safety Framework, RISKGATE—manual handling, and diesel particulate matter—IARC classification: diesel engine exhaust carcinogenic.
- A subcommittee was formed to address the high number of noise-induced hearing loss permanent incapacities still being reported by miners.
- A committee meeting was dedicated to the issue of heat and heat stress; a heat stress seminar for the mining industry was run the next day. Topics discussed at the meeting. included:
  - Thermal work limit and its use in underground metalliferous mines**:** this is a heat stress index developed by Dr Rick Brake (ventilation engineer) while at Mount Isa, who presented the topic to the meeting.
  - Managing heat stress in shot firers in open-cut mines: shot firers are exposed at the bottom of the open cut, with high sun exposure and little air movement. Representatives from Orica presented that company's approach to minimising the risk for above-ground crews.
  - Medical conditions and drugs which can increase the risk of heat stress: Dr David Smith presented on medical conditions that increase the body's heat load or reduce the ability of the body to lose heat from the skin. The presentation discussed drugs, both licit and illicit, that have similar actions and raise the risk. There was discussion on how to ensure that workers with these conditions/drug uses are appropriately assessed.
- A committee meeting was dedicated to presentations by Workplace Health & Safety Queensland on its Workplace Wellness Initiative and harmonised work health and safety legislation.

Underground mining, Queensland
Photo: Roslyn Budd, Queensland Government Image Library

2. The Mines Inspectorate

2.1 Departmental initiatives

Whole-body vibration

Whole-body vibration (WBV) information sheets, toolbox talks and 'train the trainer' packages for the coal industry were sent out to all coal mines and site safety and health representatives (SSHRs) in a DVD in October 2011. The packages have received positive feedback. Surface coal mines and construction sites on coal mining leases were sent a WBV self-assessment questionnaire to determine WBV management systems on site. The results of the survey will establish priorities for the Mines Inspectorate and coal mines.

Significant research work is still being carried out by Safety and Health into the effective ergonomic design of equipment, including seating design and appropriate WBV control in bladed equipment. The department's Inspector of Mines (Occupational Health) was appointed to a national expert advisory group assisting Safe Work Australia to develop a nationally consistent regulatory approach to whole-body and hand/arm vibration.

Polymeric chemical use in underground coal mines

Advances in rock glue technologies that use specifically designed resins have enabled underground coal mines to successfully deal with strata control challenges in a timely and safe manner. However, it is important that the use of void fillers and strata injection resins does not introduce new hazards that might affect the health of coal mine workers. The Mines Inspectorate, through the Inspector of Mines (Occupational Hygiene), has continued its project to review and monitor the use of these chemicals. This project focuses on the potential health effects that might exist if exposures are not adequately controlled. This has involved personal exposure monitoring at several underground coal mines during the injection of these products. The benefits of biological monitoring techniques to assess worker exposure are also being investigated.

Exposure to respirable crystalline silica in Queensland small mines and quarries

The Mines Inspectorate has continued to investigate exposure to respirable crystalline silica (RCS). During the last year a number of small mines and quarries were selected to participate in comprehensive personal dust monitoring and health surveillance programs coordinated by the Inspector of Mines (Occupational Hygiene). Exposures were assessed and recommendations to improve dust control were made. All exposure and health surveillance data were de-identified and provided to the University of Western Sydney as part of a joint research project.

Management of oxides of nitrogen

On 18 March 2011, the chief inspectors of coal mines and explosives called together mine operators, explosives companies and the CFMEU to form the Fume Steering Group. The group delivered six seminars across the major open-cut coal mining centres and produced *Queensland guidance note 20 Management of oxides of nitrogen in open-cut blasting*. This note provides guidance on preventing fume occurrence through processes such as blast design, loading techniques, and explosives product choice; managing fume events by understanding issues during preparation of the blast and taking into account meteorological conditions to establish a fume management exclusion zone; monitoring of the actual blast; and the treatment of exposure to ensure affected people receive tailored medical support associated with fume exposure.

The DNRM website contains information on the management of fume, including presentations from the seminars and a fact sheet. During 2011–12, blasting was halted at a number of sites to ensure it could be conducted at an acceptable level of risk.

The Fume Steering Group continues to meet and will produce a new version of the guidance note that will incorporate learnings from the data provided by open-cut blasts over the last year.

Opal and gemstone miners' initiative

To assist opal and gemstone miners to meet their future obligations in developing and implementing a safety and health management system (SHMS) the Mines Inspectorate developed the Opal and Gemstone Campaign (OGC).

In conjunction with industry leaders, the Mines Inspectorate has successfully developed and refined resources and training material suitable for training opal and gemstone miners to develop and implement a SHMS to suit the size and complexity of their operation. Future plans include the development of a Queensland opal and gemstone mining handbook and an information DVD for new entrants into opal and gemstone mining.

By 31 December 2011, 22 one-day workshops had been attended by 723 miners throughout regional Queensland. The workshops have proved so successful that an additional 12 workshops involving 337 attendees have been undertaken during the calendar year 2012. A further five to seven workshops will be held in 2012–13 to complete the program.

Exploration safety guidance

Significant expansion in exploration activities in the coal and metalliferous sectors across the State prompted a review of the *Minerals exploration safety guidance note* which was last updated in November 2004. The review is being conducted by a small team comprising Mines Inspectorate officers and experienced exploration industry representatives. After its proposed publication in early 2013, the review team will present the new document to the industry at a statewide series of workshops.

In conjunction with the revision of the guidance note, a seminar addressing legislative requirements and general safety at exploration sites is scheduled to be held at the end of August 2012 to which all major exploration companies and drillers have been invited. Additional inspections are planned to ensure compliance with the legislation.

Queensland Mining Industry Health and Safety Conference

The Commissioner for Mine Safety and Health Stewart Bell and the Deputy Chief Inspector of Coal Mines Ken Singer delivered presentations at the 2011 Queensland Mining Industry Health and Safety Conference entitled *A new era in health and safety*, which was held in Townsville. The Commissioner formally closed the conference.

Quarrying Safety and Health Seminar, Brisbane

The 10th annual Quarrying Safety and Health Seminar was held on 13 June 2012 at the Brisbane Convention and Exhibition Centre. More than 320 delegates attended. The seminar was opened by the Commissioner for Mine Safety and Health with the Chief Inspector of Mines (Metalliferous) Rob O'Sullivan delivering a presentation on the harmonisation of national safety and health laws.

Quarrying and Small Mines Safety and Health Seminar, Townsville

The 7th annual Quarrying and Small Mines Safety and Health Seminar, *Closing the gap*, was held in Townsville on 24 April 2012. Presentations delivered by DNRM safety and health officers were:

- 2011 accidents and incidents, presented by Hermann Fasching, Manager Safety and Health
- Dust exposure profiles in quarrying, presented by Mark Desira, Acting Senior Principal Occupational Hygienist
- Queensland's response to the Pike River mine disaster, presented by Ken Singer, Deputy Chief Inspector of Coal Mines
- Slope stability, presented by Katie Ormonde, Inspector of Mines (Geomechanical)
- Mines Inspectorate update, presented by Rob O'Sullivan, Chief Inspector of Mines (Metalliferous)

Safety publications for small mines and quarries

Following on from the publication of the popular practical guides *Slope stability field book* and *Traffic management*, which were developed with assistance from quarrying industry representatives and the Institute of Quarrying Australia, a new guide will be published by the end of 2012: *Working safely with electricity: Field book*.

2.2 Legislative changes

Reviews of the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*

The Mines Inspectorate regularly reviews its legislation in consultation with stakeholders and representative bodies to ensure the legislative framework is robust and promotes industry best practice to minimise risk to persons at mine sites. During 2011–12, the Mines Inspectorate initiated and implemented amendments to the Coal Mining Safety and Health Regulation 2001 (the Regulation). The Coal Mining Safety and Health Amendment Regulation (No 1) 2012 amended the regulations to ensure a balanced approach to the election of SSHRs was taken at coal mines.

It is a requirement under part 7 of the *Coal Mining Safety and Health Act 1999* (the Act) for up to two SSHRs to be appointed for each coal mine. SSHRs are an important aspect of the safety system for a mine and have powers to assess and reduce risks, investigate complaints and stop mining operations if there is an immediate danger to workers.

Section 28 of the Act defines an SSHR as, 'a coal mine worker elected under section 93 by coal mine workers at the coal mine to exercise the powers and perform the functions of a site safety and health representative mentioned in part 7 division 2.' Therefore, SSHRs have to be elected by the coal mine workers, a group of individuals defined under Schedule 3 as, 'an individual who carries out work at a coal mine…' that includes employees of the coal mine operator, contractors and employees of those contractors.

There was no direction in the Act about how an election under section 93 was to be conducted or information about the period for which a SSHR should normally be appointed, other than it being for the term decided by the workers. Consequently, the Regulation was amended to provide a process for the election of SSHRs. The Coal Mining Safety and Health Amendment Regulation (No. 1) 2012 is available at http://www.legislation.qld.gov.au/LEGISLTN/SLS/2012/12SL033.pdf

The Mines Inspectorate will continue to work with unions and industry representatives to ensure Queensland's mining safety and health legislation supports the safe operation of mines and protects the safety and health of workers.

2.3 Prosecutions and other enforcement actions

Coal mines

On or about 4 February 2010 at North Goonyella coal mine, the site supervisor failed to discharge their safety and health obligations, contrary to section 34 of the *Coal Mining Safety*

and Health Act 1999; the contravention involved exposure to a substance that was likely to cause death or grievous bodily harm. Also, on or about 4 February 2010 at North Goonyella coal mine, the explosive risk zone controller failed to discharge their safety and health obligations, contrary to section 34 of the *Coal Mining Safety and Health Act 1999*. The site supervisor, who pleaded guilty, received a $15 000 fine and was required to pay $500 in professional fees and $5000 for the cost of the investigation. The explosive risk zone controller, who pleaded guilty, received a $1500 fine and was required to pay $500 in professional fees.

Metalliferous mines and quarries

On 4 July 2009, a fatality occurred at Roseneath Quarry, Hanson when a water truck driver lost control of the truck when driving on a slope and the truck went over an embankment. The operator Hanson Construction Materials Pty Ltd, the contractor Mendi Constructions Materials Pty Ltd and the site senior executive (SSE) were prosecuted. The operator, who pleaded guilty, received an $80 000 fine and was required to pay $13 000 for the cost of the investigation. The contractor, who pleaded guilty, received a $93 000 fine and was required to pay $26 000 for the cost of the investigation. The SSE, who pleaded guilty, received a $7500 fine.

On 4 February 2010, a serious accident occurred at Ablatio Sandstone Mine in which a worker engaged in separating slabs from a pre-cut sandstone block had his foot partially severed by a forklift tine when a forklift parked 3 m away rolled forward and one of the fork arms struck his foot. The operator Ablatio Pty Ltd and the SSE were prosecuted. The operator, who pleaded guilty, received a $40 000 fine and was required to pay $17 985 in professional fees. The SSE, who pleaded guilty, received a $6000 fine and was required to pay $17 985 in professional fees.

2.4 Coronial inquests into mining-related fatalities

No coronial inquests were held into mining-related fatalities in 2011–12.

2.5 Complaints about safety and health at mines

Queensland mine safety and health legislation, particularly section 254 of the *Mining and Quarrying Safety and Health Act 1999* and section 275 of the *Coal Mining Safety and Health Act 1999*, allows mineworkers or their representatives to make confidential complaints about safety and health matters to the Mines Inspectorate.

During 2011–12, 96 complaints were received by the Mines Inspectorate, of which 67 were from mineworkers or their representatives. The complaints are divided into the types shown in Figure 2.1. Mineworker safety complaints included dust exposure, inadequate equipment maintenance, quality of training, fatigue and working hours, non-reporting of incidents, workplace bullying and lack of personal protective equipment (PPE).

Of the total complaints, 68 have been fully completed and closed out. The broad range of outcomes included:

- 9 complaints resulted in one or more directive(s) or substandard condition or practice notice(s) issued by the Mines Inspectorate
- 24 complaints resulted in a mine record entry being made by the Mines Inspectorate
- 28 involved the Mines Inspectorate contacting the site
- 4 were not under the Mines Inspectorate jurisdiction and were passed on to the appropriate body
- 3 were addressed by other means.

2.6 Directives issued by the Mines Inspectorate

Inspectors of mines and inspection officers have the power to issue directives under part 9, division 5 of the *Mining and Quarrying Safety and Health Act 1999* and the *Coal Mining Safety and Health Act 1999*.

During 2011–12, the Mines Inspectorate issued 375 directives, an increase of 30 from 345 directives issued in 2010–11.

The directives issued in 2011–12 were distributed by region below:

- 195 in the central region
- 135 in the northern region
- 45 in the southern region.

Of these directives, 150 were issued under the *Coal Mining Safety and Health Act 1999* and 225 were issued under the *Mining and Quarrying Safety and Health Act 1999*. The types of directives issued are listed below:

- to ensure coal mineworker competent
- to ensure worker competent
- to reduce risk
- to suspend operations for unacceptable level of risk
- to review SHMS and principal hazard management plans
- to review SHMS
- to suspend operations for ineffective SHMS
- to isolate site.

Table 2.1 shows some reduction in inspections and audits this financial year due to an increase in investigations undertaken by the Mines Inspectorate from 146 in 2010–11 to 193 in 2011–12—a 32% increase for the reporting period.

Figure 2.1: Complaint type and number received across all sectors, 2011–12 (compared with 2010–11)

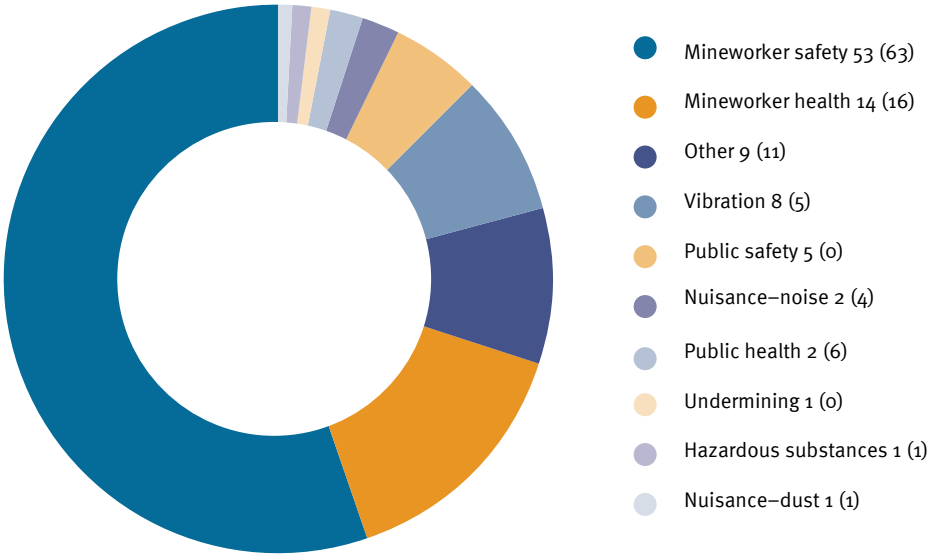


Table 2.1: Mines Inspectorate inspection activity 2011–12

	2008–09	2009–10	2010–11	2011–12
Inspections	1 115	1 197	1 321	1 387
Inspections–unannounced	337	288	161	136
Inspections–weekend or backshift	27	18	18	8
Inspections–unannounced weekend or backshift	29	32	12	12
Audits–subject or system specific	41	135	135	48
Audits–compliance audits	24	108	44	7

Mine worker applies sunscreen, Meandu Mine, Queensland
Photo: DNRM

Miners changerooms, Queensland
Photo: DNRM

3. Lag performance indicators: incident number

The following graphs and accompanying tables show five-year trends in a number of indicators used to assess safety and health performance across the industry. These are the raw number of incidents and are provided for information. Comparison of these numbers across sectors is not valid because they are not normalised. Normalised data and rates are presented in Chapter 4 of this report.

The performance indicators plotted are:

- Table 3.1: Number of lost time injuries, 2007–12
- Table 3.2: Number of lost time injury days (days away from work only), 2007–12
- Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2007–12
- Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties because they cannot return to their normal job), 2007–12
- Table 3.5: Number of disabling injury days (days on alternative duties), 2007–12
- Table 3.6: Number of lost time injuries and disabling injuries, 2007–12
- Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2007–12
- Table 3.8: Number of permanent incapacities, 2007–12
- Table 3.9: Number of fatalities, 2007–12
- Table 3.10: Number of medical treatment injuries, 2007–12
- Table 3.11: Total recordable injuries, 2007–12
- Table 3.12: Number of reported high potential incidents, 2007–12
- Table 3.13: Number of employees at 30 June, 2007–12
- Table 3.14: Total hours worked (millions), 2007–12

These indicators are all lag indicators—they are a measure of performance after the event. It is better to measure and trend lead indicators so that incidents can be predicted; however, appropriate lead indicators are much more difficult to define and measure. A suite of lead indicators has been measured and these are detailed in Chapter 6 of this report.

The use of the number of LTIs as the main industry performance measure with respect to health and safety has been criticised. The criticism centres on the fact that the number of LTIs can be manipulated by having injured or sick workers prematurely return to work and be placed on alternative or light duties so they do not appear in the statistics as an LTI. To prevent such manipulation, the use of total recordable injuries—the sum of the number of fatalities, LTIs, DIs and MTIs—is proposed as a parameter that more accurately reflects the injury status at a mine site. The department only commenced collecting MTI data from metalliferous mines and quarries in 2010–11.

Table 3.3 shows the number of days lost from work and the number of days on alternative duties for LTIs. Most jurisdictions in Australia do not include the number of days on alternative duties but only count the days lost from work (see Table 3.2). The true severity of an injury can only be assessed by evaluating the number of days a worker is away from their normal job. Thus it is necessary to count the days lost from work and the days on alternative duties when assessing injury severity.

Table 3.1: Number of lost time injuries, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	152	125	138	150	190
Coal–underground	81	80	64	53	116
Coal subtotal	**233**	**205**	**202**	**203**	**306**
Metalliferous–surface	54	54	47	53	71
Metalliferous–underground	40	26	30	27	49
Metalliferous subtotal	**94**	**80**	**77**	**80**	**120**
Quarries	25	16	28	28	26
All operations	**352**	**301**	**307**	**311**	**452**

Table 3.2: Number of lost time injury days (days away from work only), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	5 312	4 234	3 184	4 988	3 829
Coal–underground	1 887	2 105	2 010	1 287	2 059
Coal subtotal	**7 199**	**6 339**	**5 194**	**6 275**	**5 888**
Metalliferous–surface	454	918	1 110	994	1 103
Metalliferous–underground	960	1 135	639	621	736
Metalliferous subtotal	**1 414**	**2 053**	**1 749**	**1 615**	**1 839**
Quarries	322	328	462	1 023	573
All operations	**8 935**	**8 720**	**7 405**	**8 913**	**8 300**

Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	8 330	7 669	6 461	10 297	6 656
Coal–underground	3 021	5 925	3 884	2 463	3 441
Coal subtotal	**11 351**	**13 594**	**10 345**	**12 760**	**10 097**
Metalliferous–surface	909	1 596	1 785	1 375	1 294
Metalliferous–underground	1 831	1 819	1 560	1 132	1 108
Metalliferous subtotal	**2 740**	**3 415**	**3 345**	**2 507**	**2 402**
Quarries	429	378	635	1 605	736
All operations	**14 520**	**17 387**	**14 325**	**16 872**	**13 235**

Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties because they cannot return to their normal job), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	151	208	214	270	315
Coal–underground	158	121	115	184	192
Coal subtotal	**309**	**329**	**329**	**454**	**507**
Metalliferous–surface	38	31	28	35	59
Metalliferous–underground	75	57	70	51	92
Metalliferous subtotal	**113**	**88**	**98**	**86**	**151**
Quarries	3	0	1	0	10
All operations	**425**	**417**	**428**	**540**	**668**

Table 3.5: Number of disabling injury days (days on alternative duties), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	5 317	6 295	4 234	6 010	5 373
Coal–underground	3 735	3 028	2 828	3 836	2 542
Coal subtotal	**9 052**	**9 323**	**7 062**	**9 846**	**7 915**
Metalliferous–surface	668	828	1 264	876	1 321
Metalliferous–underground	1 601	2 195	2 610	955	2 747
Metalliferous subtotal	**2 269**	**3 023**	**3 874**	**1 831**	**4 068**
Quarries	100	0	41	0	231
All operations	**11 421**	**12 346**	**10 977**	**11 677**	**12 214**

Table 3.6: Number of lost time injuries and disabling injuries, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	303	333	352	420	505
Coal–underground	239	201	179	237	308
Coal subtotal	**542**	**534**	**531**	**657**	**813**
Metalliferous–surface	92	85	75	88	130
Metalliferous–underground	115	83	100	78	141
Metalliferous subtotal	**207**	**168**	**175**	**166**	**271**
Quarries	28	16	29	28	36
All operations	**777**	**718**	**735**	**851**	**1 120**

Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	13 647	13 964	10 695	16 307	12 029
Coal–underground	6 756	8 953	6 712	6 299	5 983
Coal subtotal	**20 403**	**22 917**	**17 407**	**22 606**	**18 012**
Metalliferous–surface	1 577	2 424	3 049	2 251	2 615
Metalliferous–underground	3 432	4 014	4 170	2 087	3 855
Metalliferous subtotal	**5 009**	**6 438**	**7 219**	**4 338**	**6 470**
Quarries	529	378	676	1 605	967
All operations	**25 941**	**29 733**	**25 302**	**28 549**	**25 449**

Table 3.8: Number of permanent incapacities, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	2	23	36	40	16
Coal–underground	3	8	5	10	3
Coal subtotal	**5**	**31**	**41**	**50**	**19**
Metalliferous–surface	1	0	3	1	3
Metalliferous–underground	0	3	2	1	3
Metalliferous subtotal	**1**	**3**	**5**	**2**	**6**
Quarries	1	5	1	5	3
All operations	**7**	**39**	**47**	**57**	**28**

Table 3.9: Number of fatalities, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	0	1	0	2	0
Coal–underground	0	0	0	0	0
Coal subtotal	**0**	**1**	**0**	**2**	**0**
Metalliferous–surface	0	0	0	0	0
Metalliferous–underground	1	1	0	1	0
Metalliferous subtotal	**1**	**1**	**0**	**1**	**0**
Quarries	0	1	1	0	1
Exploration	0	1	0	0	0
All operations	**1**	**4**	**1**	**3**	**1**

Table 3.10: Number of medical treatment injuries, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	618	446	264	403	412
Coal–underground	548	478	138	271	348
Coal subtotal	**1 166**	**924**	**402**	**674**	**760**
Metalliferous–surface	n/a	n/a	n/a	88	195
Metalliferous–underground	n/a	n/a	n/a	60	149
Metalliferous subtotal	**n/a**	**n/a**	**n/a**	**148**	**344**
Quarries	n/a	n/a	n/a	31	36
All operations	**1 166**	**924**	**402**	**853**	**1 140**

n/a = data was not collected at this time

Table 3.11: Total recordable injuries, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	921	779	616	823	917
Coal–underground	787	679	317	508	656
Coal subtotal	**1 708**	**1 458**	**933**	**1 331**	**1 573**
Metalliferous–surface	n/a	n/a	n/a	176	325
Metalliferous–underground	n/a	n/a	n/a	138	290
Metalliferous subtotal	**n/a**	**n/a**	**n/a**	**314**	**615**
Quarries	n/a	n/a	n/a	59	72
All operations	**1 708**	**1 458**	**933**	**1 704**	**2 260**

n/a = data was not collected at this time

Table 3.12: Number of reported high potential incidents, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	613	641	988	1 228	1 380
Coal–underground	107	82	356	338	398
Coal subtotal	**720**	**723**	**1 344**	**1 566**	**1 778**
Metalliferous–surface	167	128	214	183	302
Metalliferous–underground	103	137	121	162	216
Metalliferous subtotal	**270**	**265**	**335**	**345**	**518**
Quarries	54	34	72	68	94
All operations	**1 044**	**1 022**	**1 751**	**1 979**	**2 390**

Table 3.13: Number of employees at 30 June, 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	18 989	21 582	22 339	26 346	33 391
Coal–underground	4 521	5 029	4 516	6 222	7 698
Coal subtotal	**23 510**	**26 611**	**26 855**	**32 568**	**41 089**
Metalliferous–surface	4 933	6 943	6 653	7 776	8 363
Metalliferous–underground	4 298	4 654	4 195	5 219	6 154
Metalliferous subtotal	**9 231**	**11 597**	**10 848**	**12 995**	**14 517**
Quarries	1 394	1 483	1 310	1 373	1 707
All operations	**34 135**	**39 691**	**39 013**	**46 936**	**57 313**

Table 3.14: Total hours worked (millions), 2007–12

	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	40.9	45.6	44.8	50.3	61.9
Coal–underground	9.9	10.1	10.3	12.0	17.1
Coal subtotal	**50.8**	**55.7**	**55.1**	**62.3**	**79.1**
Metalliferous–surface	18.1	17.5	15.0	18.0	19.8
Metalliferous–underground	10.2	12.3	9.0	10.2	14.2
Metalliferous subtotal	**28.3**	**29.8**	**24.0**	**28.2**	**34.0**
Quarries	2.2	2.9	2.3	2.0	3.7
All operations	**81.4**	**88.3**	**81.4**	**92.5**	**116.8**

View from operators cab in dragline
Photo: DNRM

Elbow Valley Mine, Queensland
Photo: DNRM

4. Lag performance indicators: incident rates

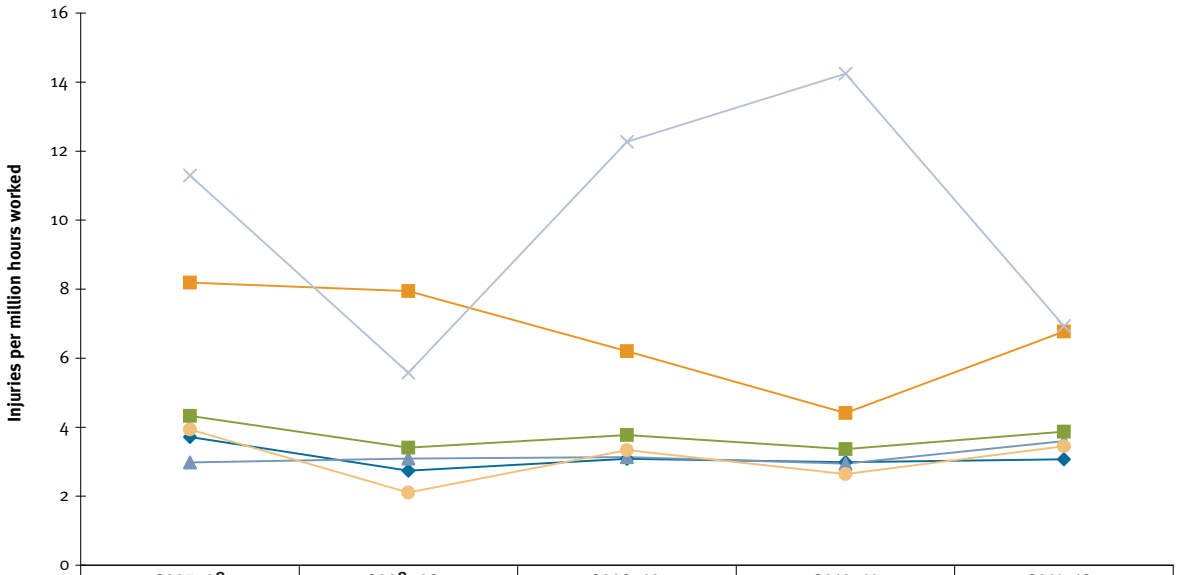
The graphs in this chapter and their accompanying tables show five-year trends across a number of indicators used to assess safety and health performance across the industry. The data presented here are normalised either in terms of the number of hours worked or the average days lost per injury. These normalised values can be used to make comparisons across different sectors.

The performance indicators plotted are:

- Figure 4.1: Lost time injury frequency rate, 2007–12
- Figure 4.2: Lost time injury severity rate (days away from work only), 2007–12
- Figure 4.3: Lost time injury duration rate (days away from work only), 2007–12
- Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2007–12
- Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2007–12
- Figure 4.6: Disabling injury frequency rate, 2007–12
- Figure 4.7: Disabling injury severity rate, 2007–12
- Figure 4.8: Disabling injury duration rate, 2007–12
- Figure 4.9: Lost time injury and disabling injury frequency rate, 2007–12
- Figure 4.10: Lost time injury and disabling injury severity rate, 2007–12
- Figure 4.11: Lost time injury and disabling injury duration rate, 2007–12
- Figure 4.12: Permanent incapacity frequency rate, 2007–12
- Figure 4.13: Fatality frequency rate, 2007–12
- Figure 4.14: Total recordable injury frequency rate for coal mines, 2007–12

Figures 4.10 and 4.11 indicate the combined LTI and DI severity rate and duration rate respectively. These performance indicators are the best measure of safety performance and are primarily referred to when assessing industry performance.

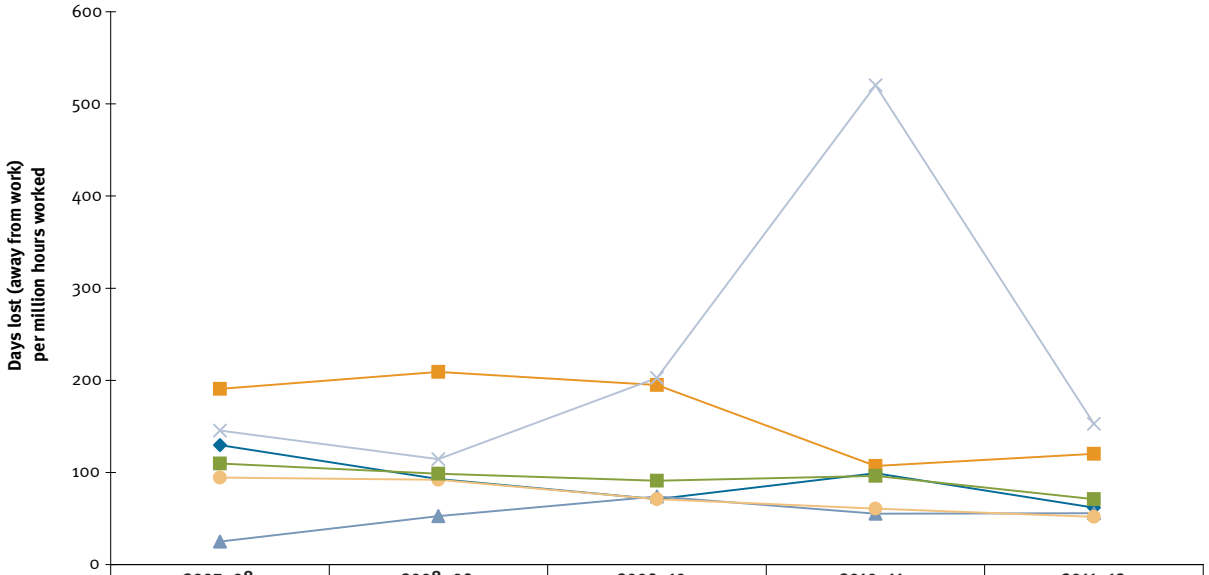
Figure 4.1: Lost time injury frequency rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	3.7	2.7	3.1	3.0	3.1
Coal–underground	8.2	7.9	6.2	4.4	6.8
Metalliferous–surface	3.0	3.1	3.1	2.9	3.6
Metalliferous–underground	3.9	2.1	3.3	2.6	3.4
Quarries	11.3	5.6	12.3	14.2	6.9
All operations	4.3	3.4	3.8	3.4	3.9

Financial year

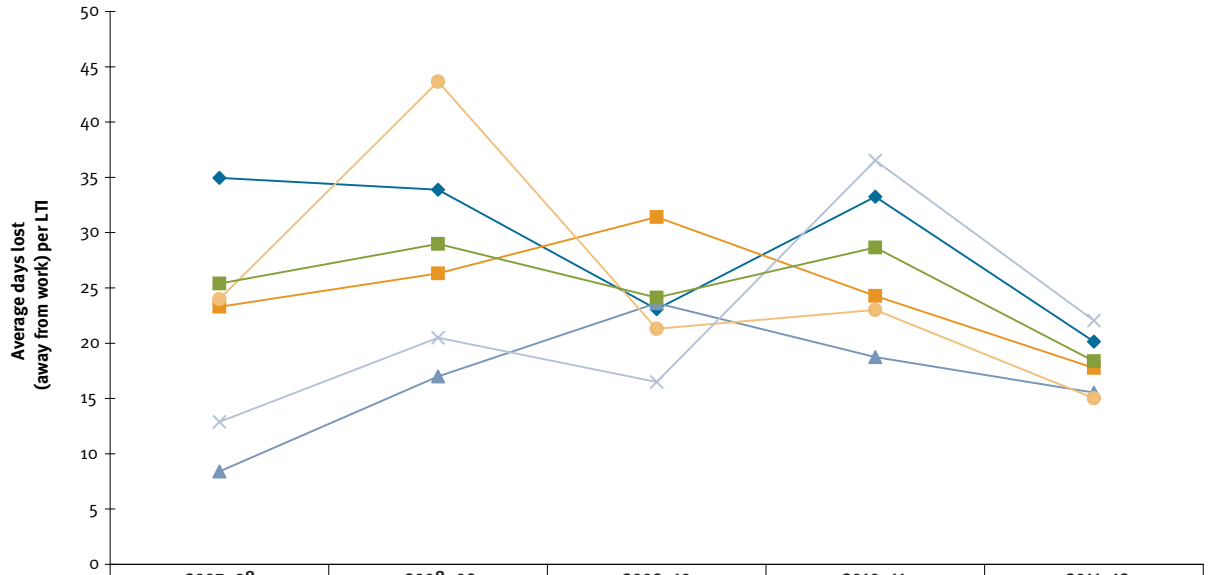
Figure 4.2: Lost time injury severity rate (days away from work only), 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	130	93	71	99	62
Coal–underground	191	209	195	107	120
Metalliferous–surface	25	53	74	55	56
Metalliferous–underground	94	92	71	61	52
Quarries	146	114	202	520	153
All operations	110	99	91	96	71

Financial year

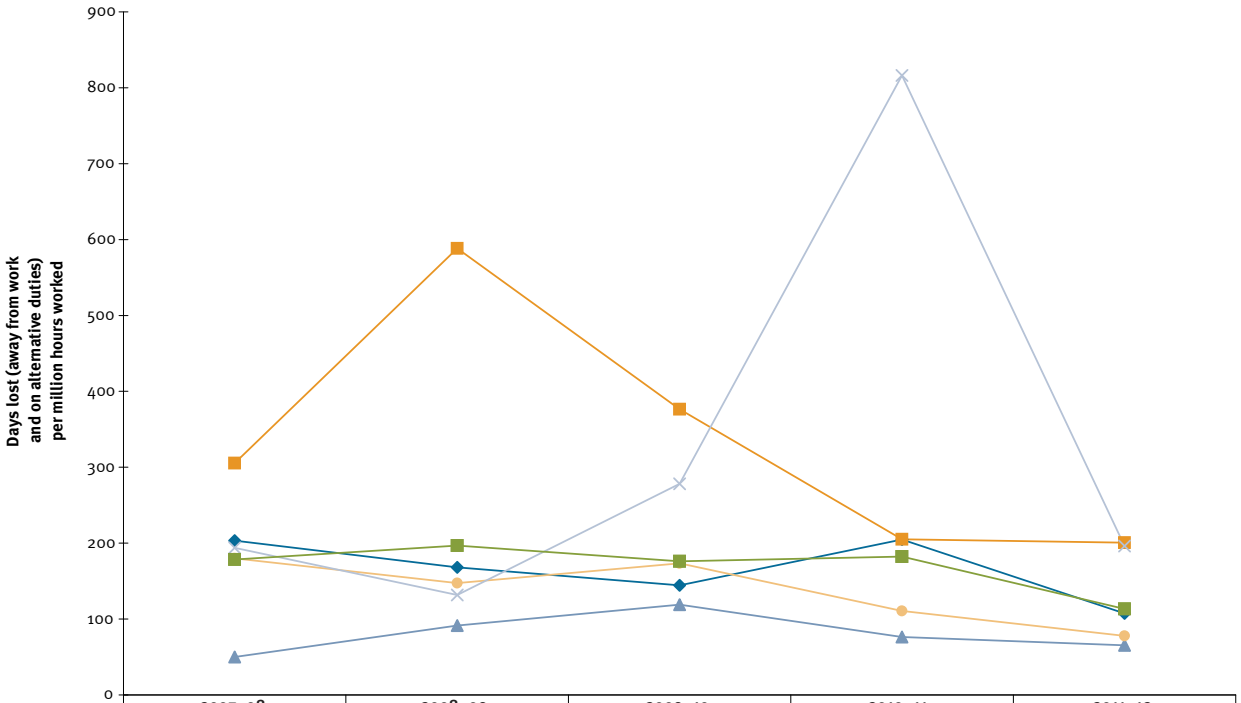
Figure 4.3: Lost time injury duration rate (days away from work only), 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	34.9	33.9	23.1	33.3	20.2
Coal–underground	23.3	26.3	31.4	24.3	17.8
Metalliferous–surface	8.4	17.0	23.6	18.8	15.5
Metalliferous–underground	24.0	43.7	21.3	23.0	15.0
Quarries	12.9	20.5	16.5	36.5	22.0
All operations	25.4	29.0	24.1	28.7	18.4

Financial year

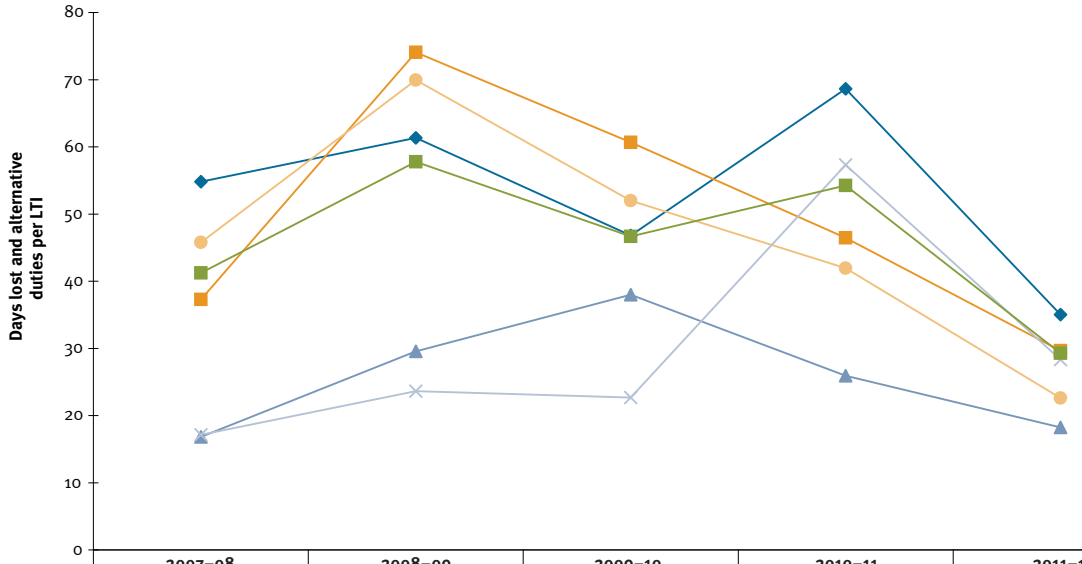
Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	203	168	144	205	107
Coal–underground	305	589	376	205	201
Metalliferous–surface	50	91	119	76	65
Metalliferous–underground	180	147	173	111	78
Quarries	194	132	278	816	196
All operations	178	197	176	182	113

Financial year

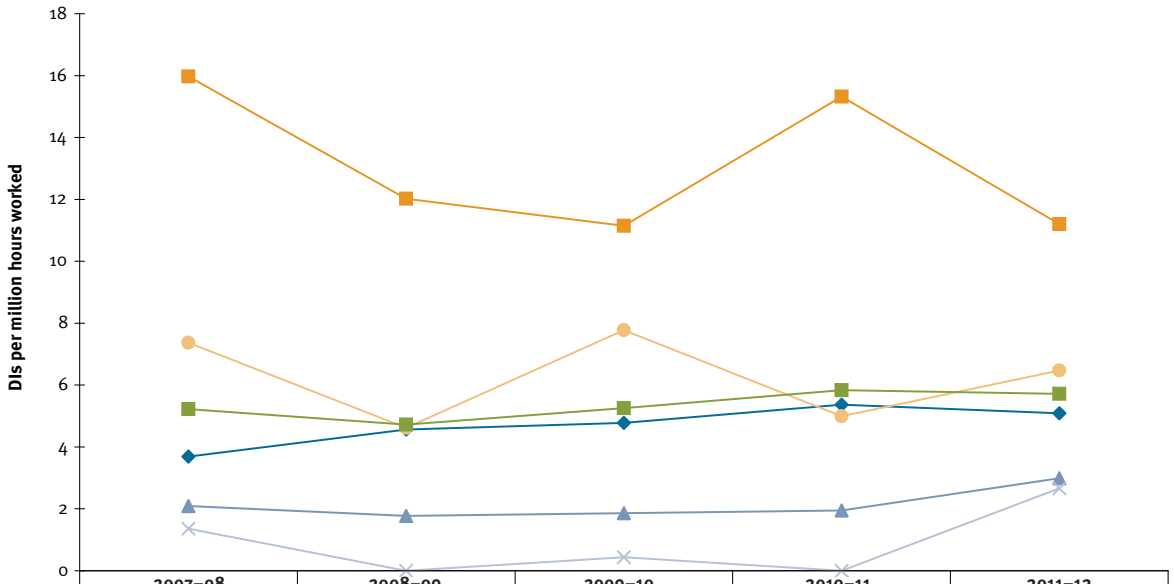
Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	54.8	61.4	46.8	68.6	35.0
Coal–underground	37.3	74.1	60.7	46.5	29.7
Metalliferous–surface	16.8	29.6	38.0	25.9	18.2
Metalliferous–underground	45.8	70.0	52.0	41.9	22.6
Quarries	17.2	23.6	22.7	57.3	28.3
All operations	41.3	57.8	46.7	54.3	29.3

Financial year

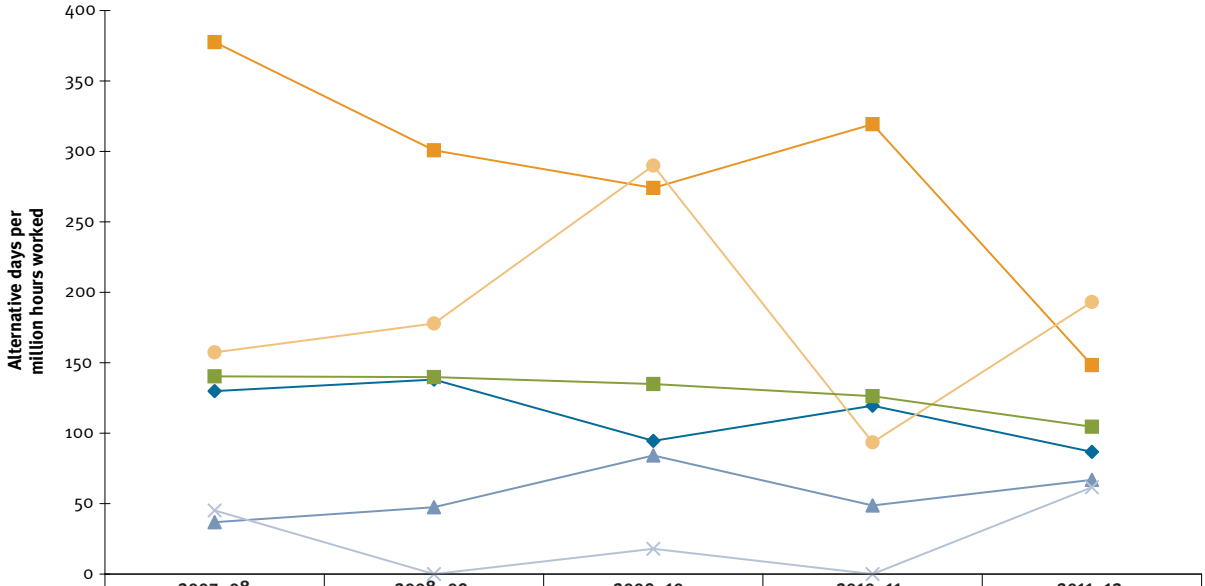
Figure 4.6: Disabling injury frequency rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	3.7	4.6	4.8	5.4	5.1
Coal–underground	16.0	12.0	11.1	15.3	11.2
Metalliferous–surface	2.1	1.8	1.9	1.9	3.0
Metalliferous–underground	7.4	4.6	7.8	5.0	6.5
Quarries	1.4	0.0	0.4	0.0	2.7
All operations	5.2	4 .7	5.3	5.8	5.7

Financial year

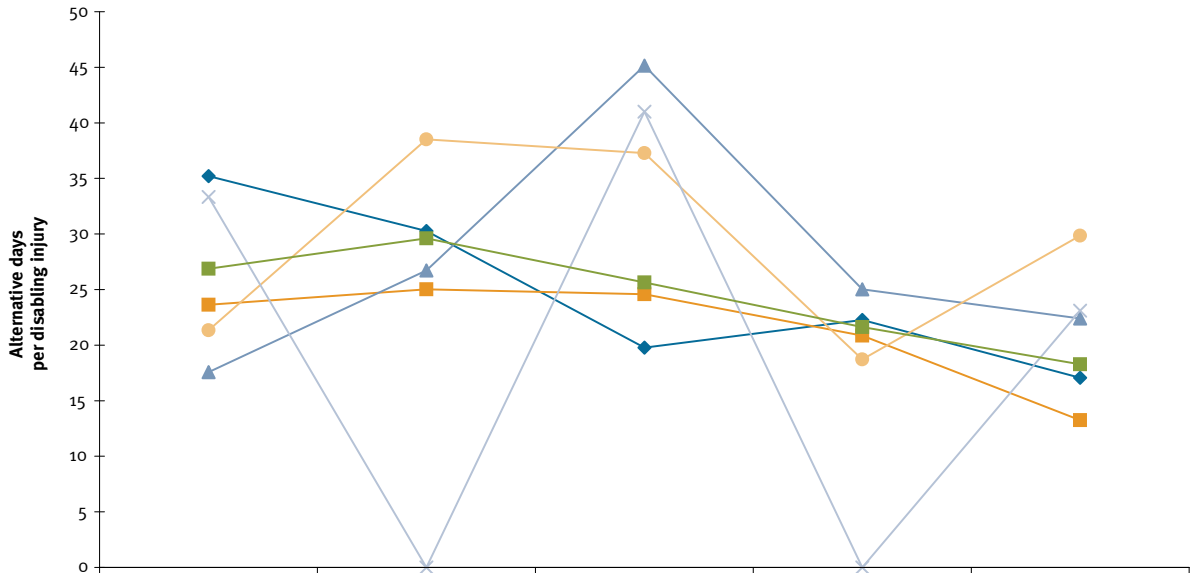
Figure 4.7: Disabling injury severity rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	130	138	95	119	87
Coal–underground	378	301	274	319	148
Metalliferous–surface	37	47	84	49	67
Metalliferous–underground	157	178	290	93	193
Quarries	45	0	18	0	62
All operations	140	140	135	126	105

Financial year

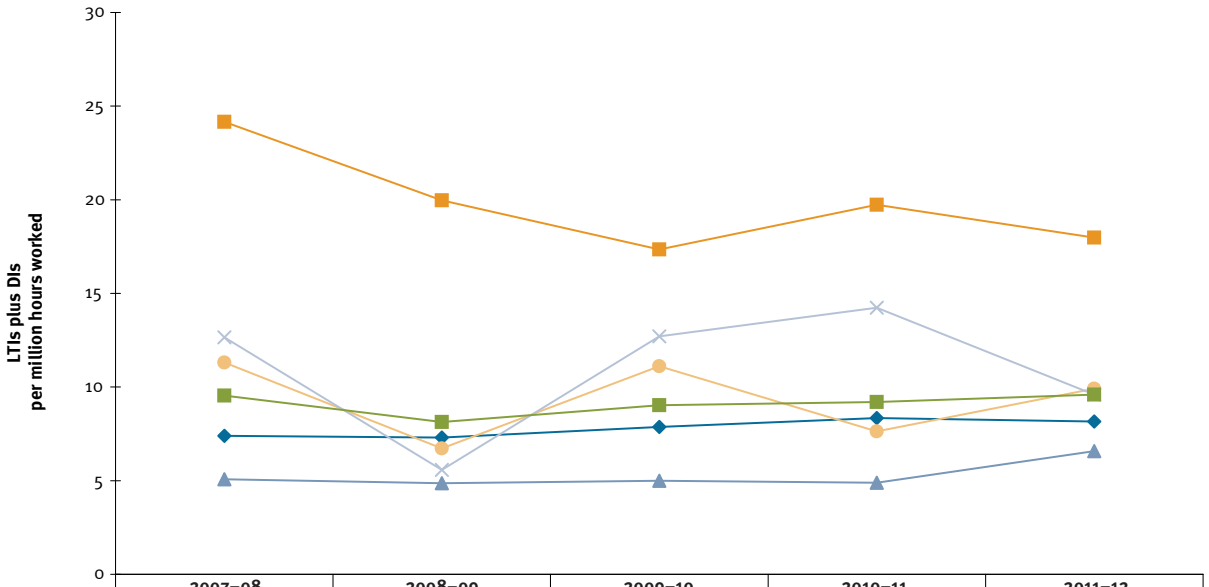
Figure 4.8: Disabling injury duration rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	35.2	30.3	19.8	22.3	17.1
Coal–underground	23.6	25.0	24.6	20.8	13.2
Metalliferous–surface	17.6	26.7	45.1	25.0	22.4
Metalliferous–underground	21.3	38.5	37.3	18.7	29.9
Quarries	33.3	0.0	41.0	0.0	23.1
All operations	26.9	29.6	25.6	21.6	18.3

Financial year

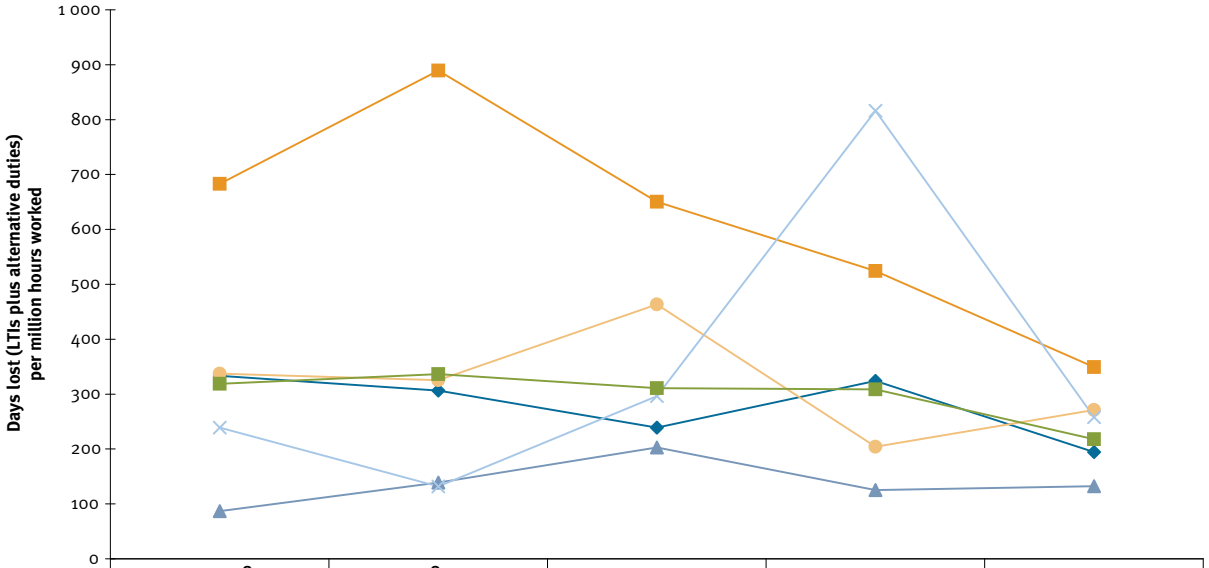
Figure 4.9: Lost time injury and disabling injury frequency rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	7.4	7.3	7.9	8.3	8.2
Coal–underground	24.2	20.0	17.3	19.7	18.0
Metalliferous–surface	5.1	4.9	5.0	4.9	6.6
Metalliferous–underground	11.3	6.7	11.1	7.6	9.9
Quarries	12.7	5.6	12.7	14.2	9.6
All operations	9.5	8.1	9.0	9.2	9.6

Financial year

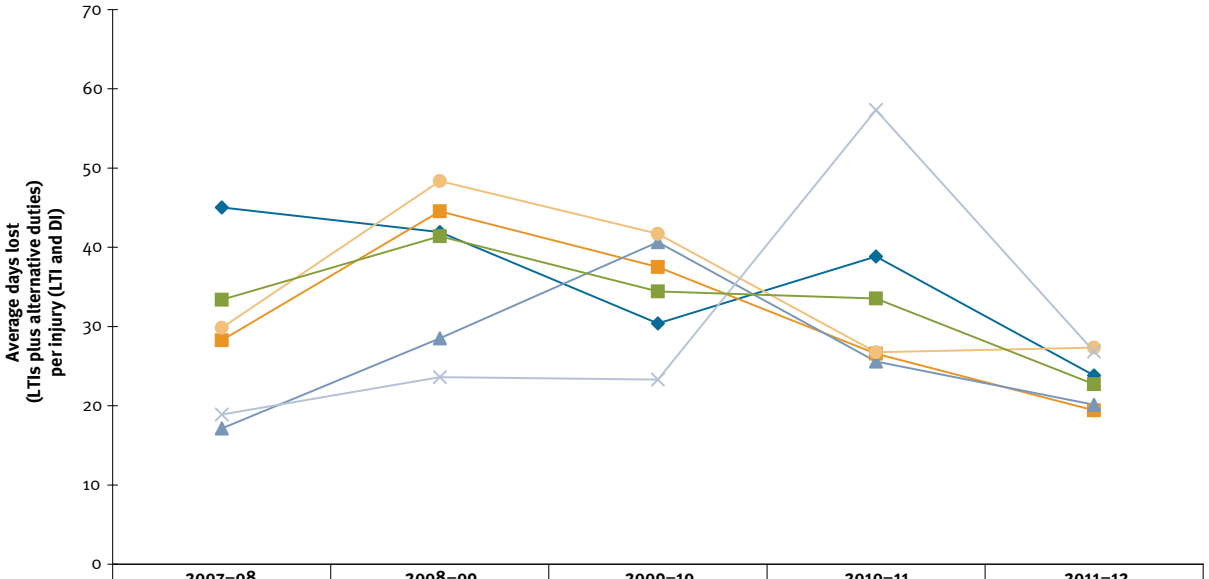
Figure 4.10: Lost time injury and disabling injury severity rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	333	306	239	324	194
Coal–underground	683	889	651	524	349
Metalliferous–surface	87	139	203	125	132
Metalliferous–underground	337	325	463	204	271
Quarries	239	132	296	816	258
All operations	319	337	311	309	218

Financial year

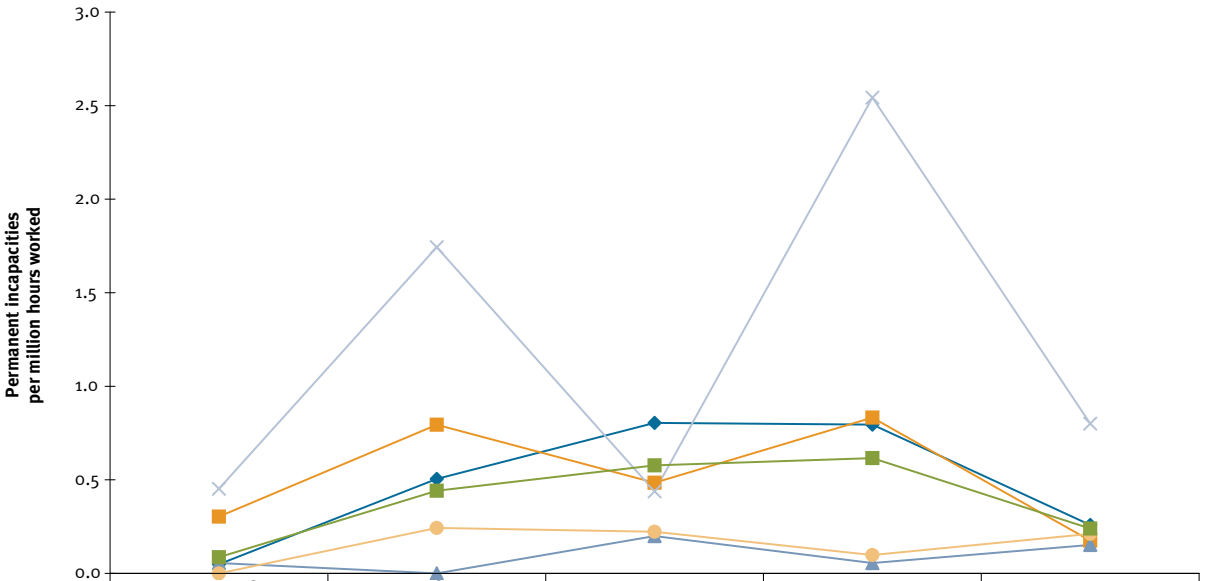
Figure 4.11: Lost time injury and disabling injury duration rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	45.0	41.9	30.4	38.8	23.8
Coal–underground	28.3	44.5	37.5	26.6	19.4
Metalliferous–surface	17.1	28.5	40.7	25.6	20.1
Metalliferous–underground	29.8	48.4	41.7	26.8	27.3
Quarries	18.9	23.6	23.3	57.3	26.9
All operations	33.4	41.4	34.4	33.5	22.7

Financial year

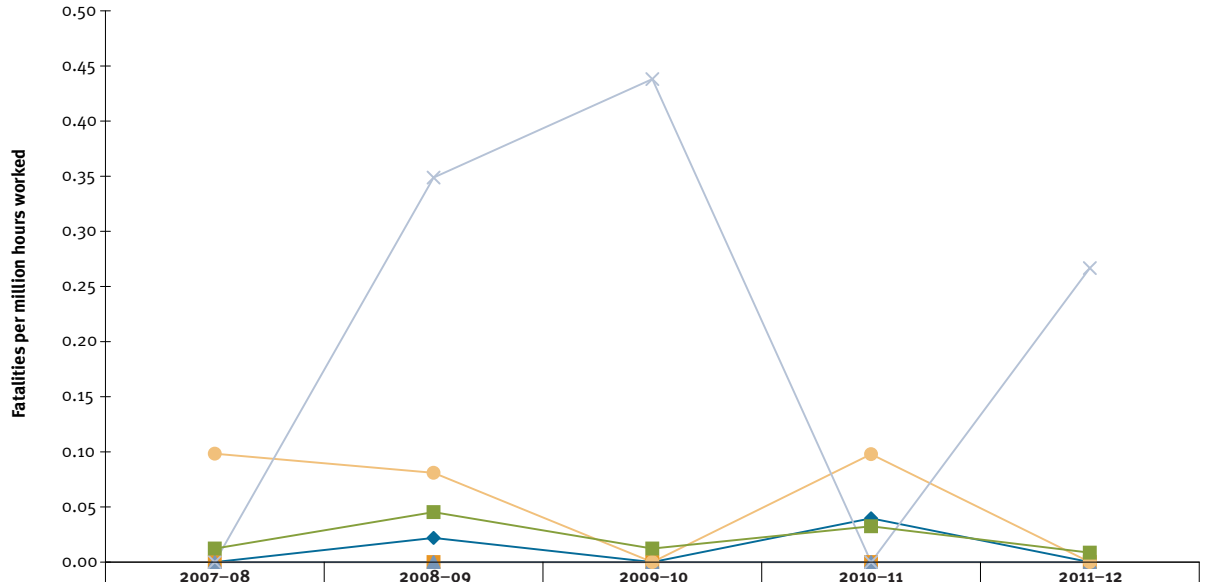
Figure 4.12: Permanent incapacity frequency rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	0.05	0.50	0.80	0.80	0.26
Coal–underground	0.30	0.79	0.48	0.83	0.18
Metalliferous–surface	0.06	0.00	0.20	0.06	0.15
Metalliferous–underground	0.00	0.24	0.22	0.10	0.21
Quarries	0.45	1.74	0.44	2.54	0.80
All operations	0.09	0.44	0.58	0.62	0.24

Financial year

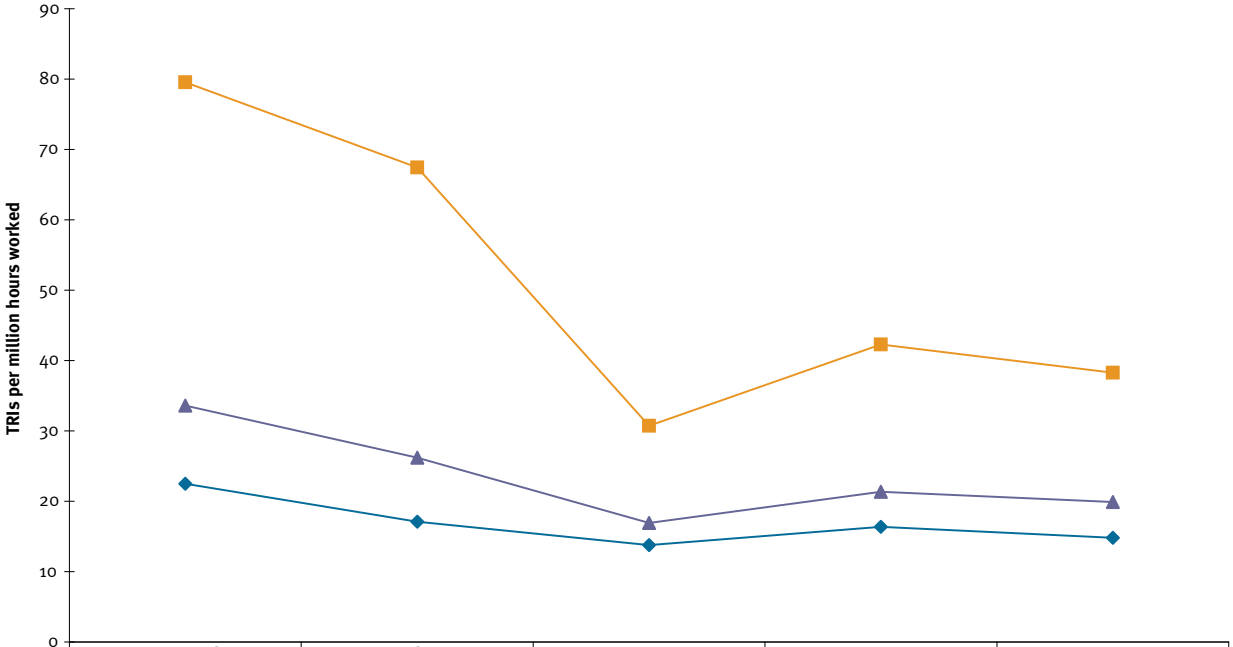
Figure 4.13: Fatality frequency rate, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	0.00	0.02	0.00	0.04	0.00
Coal–underground	0.00	0.00	0.00	0.00	0.00
Metalliferous–surface	0.00	0.00	0.00	0.00	0.00
Metalliferous–underground	0.10	0.08	0.00	0.10	0.00
Quarries	0.00	0.35	0.44	0.00	0.27
All operations	0.01	0.05	0.01	0.03	0.01

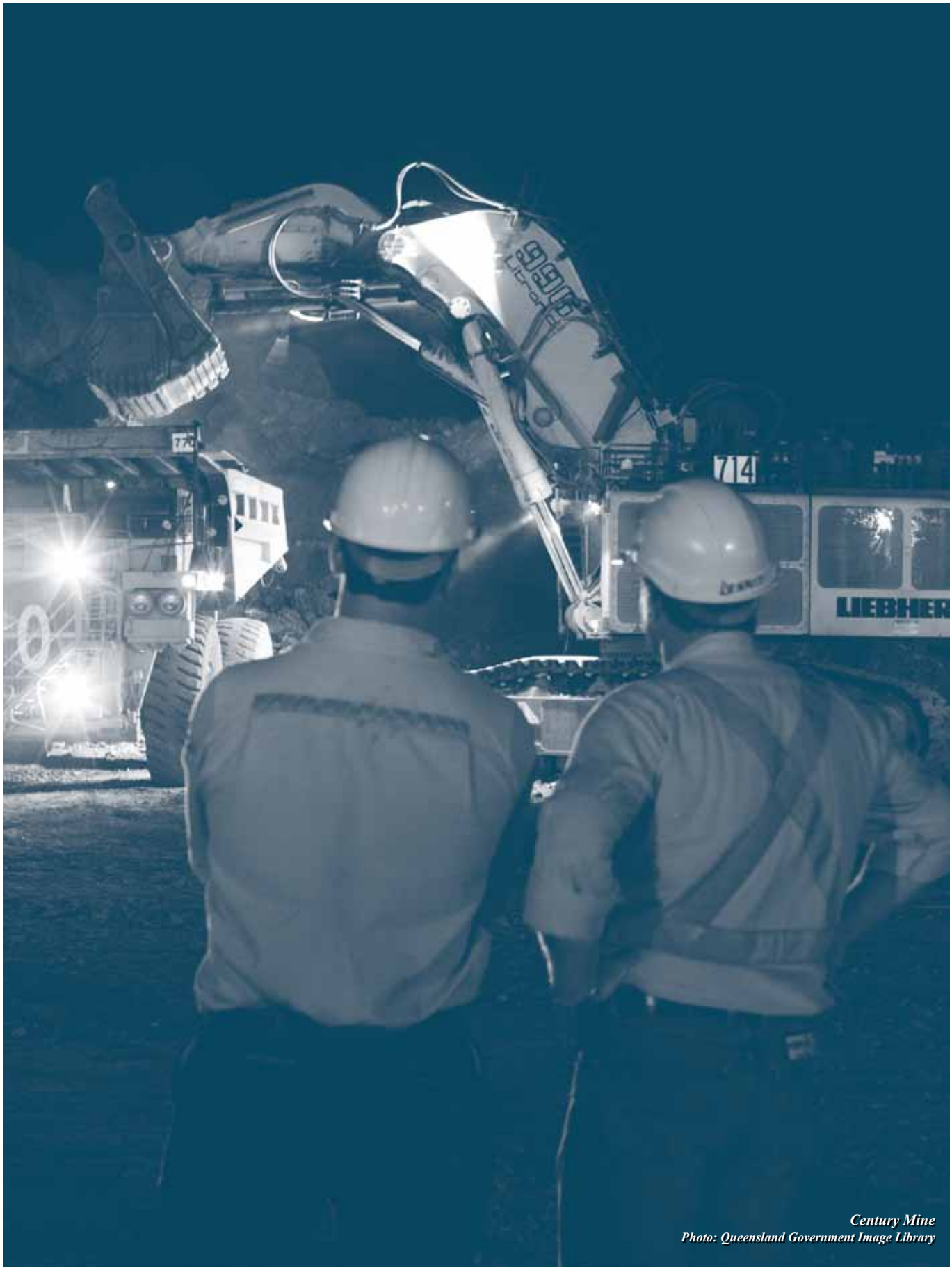
Financial year

Figure 4.14: Total recordable injury frequency rate for coal mines, 2007–12



	2007–08	2008–09	2009–10	2010–11	2011–12
Coal–surface	22.5	17.1	13.8	16.4	14.8
Coal–underground	79.6	67.4	30.7	42.3	38.3
Coal total	33.6	26.2	16.9	21.4	19.9

Financial year



Century Mine
Photo: Queensland Government Image Library

Photo: DNRM

5. Injury classification data

The LTI data collected for all sectors have been classified and demonstrated in the figures in this chapter. The figures and the sectors they illustrate are listed below.

- Figure 5.1: Body parts injured, 2009–12
- Figure 5.2: Nature of injury, 2009–12
- Figure 5.3: Mechanism of injury (the action, exposure or event that was the direct cause of the most serious injury), 2009–12
- Figure 5.4: Breakdown agency—equipment (the equipment that was principally involved in, or most closely associated with the injury), 2009–12
- Figure 5.5: Occurrence class of injuries—activity (the activity that was principally involved in, or most closely associated with the injury), 2009–12.

Significant results from this classification are summarised below.

- Back and hand injuries account for 35% of injuries (Figure 5.1).
- Sprains and strains account for 46% of injuries (Figure 5.2).
- Falls/slips/trips account for almost 20% of injuries (Figure 5.3).
- Earthmoving equipment was involved in almost 15% of injuries (Figure 5.4).
- Manual handling of equipment/material accounts for 40% of injuries (Figure 5.5).

Figure 5.1: Body parts injured, 2009–12

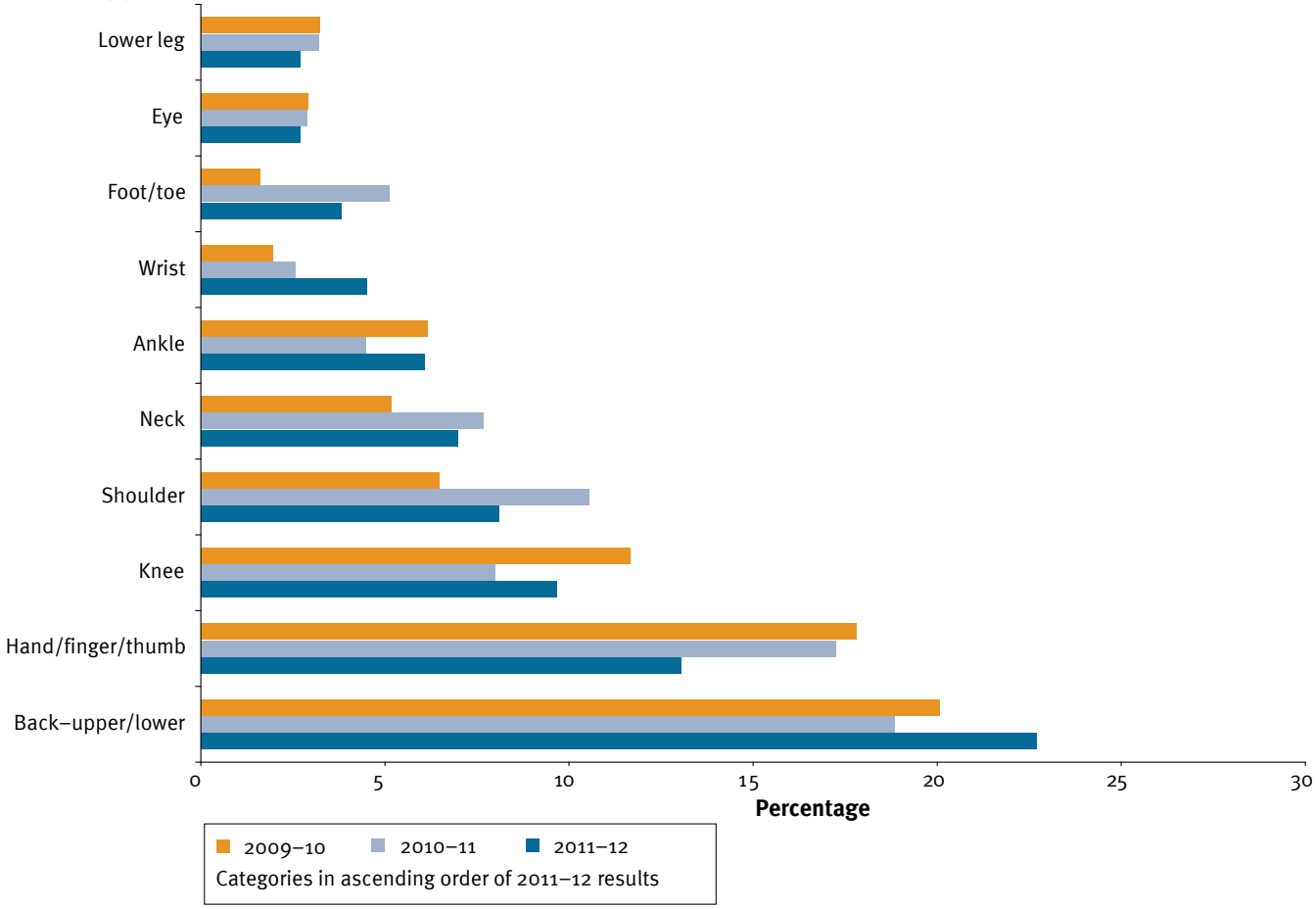


Figure 5.2: Nature of injury, 2009–12

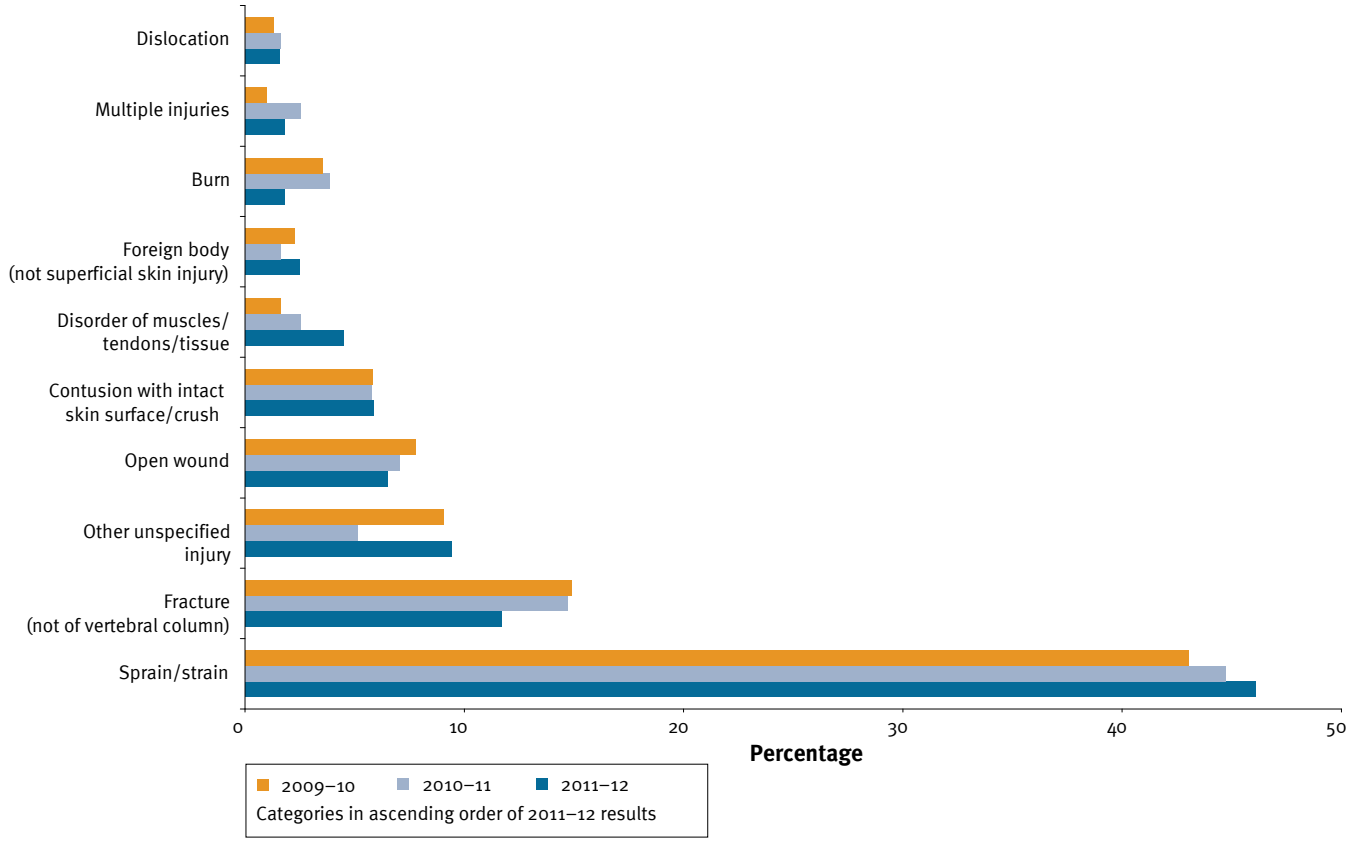


Figure 5.3: Mechanism of injury (the action, exposure or event that is the direct cause of the most serious injury), 2009–12

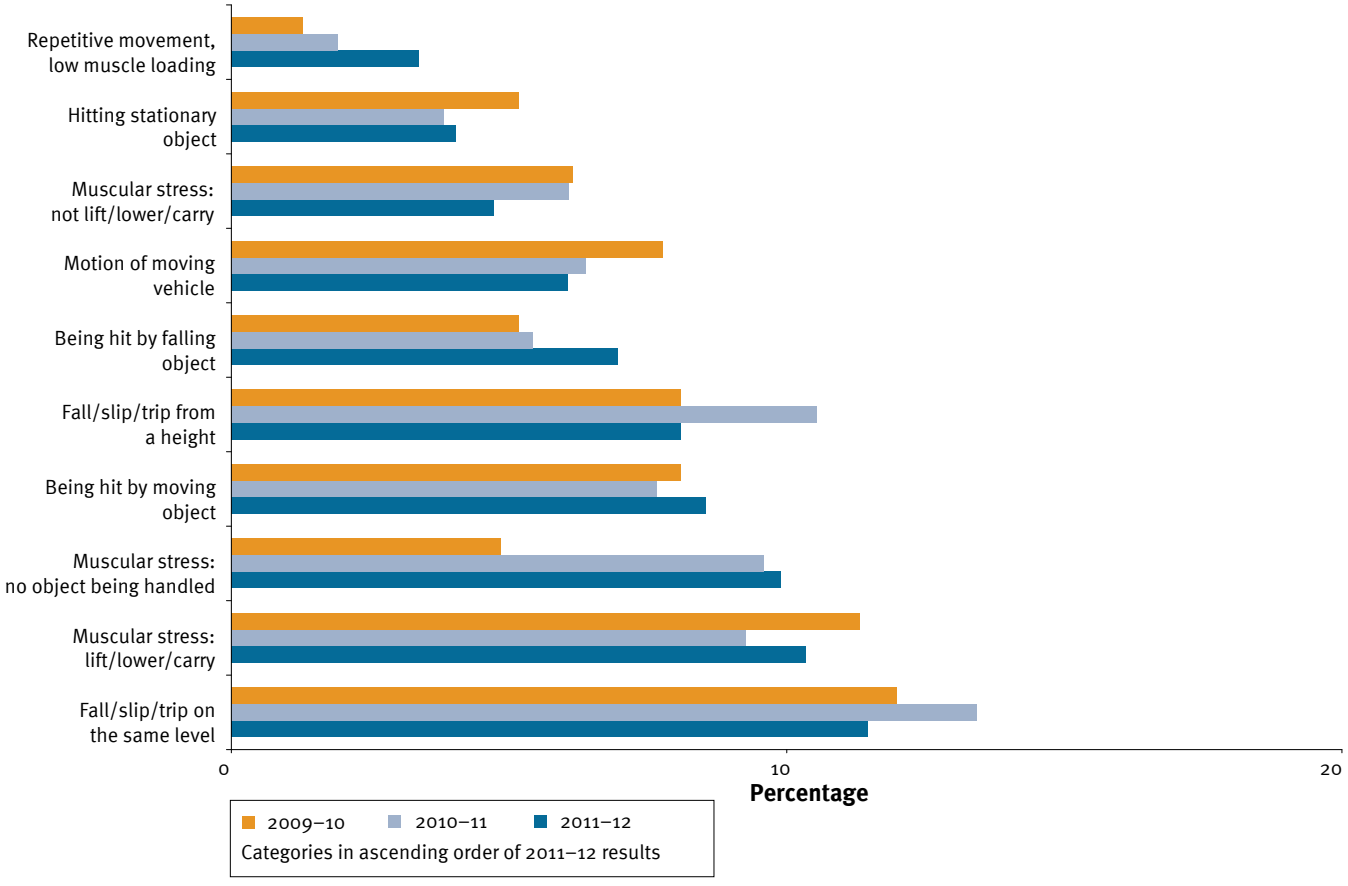


Figure 5.4: Breakdown agency: equipment (the equipment that was principally involved in, or most closely associated with the injury), 2009–12

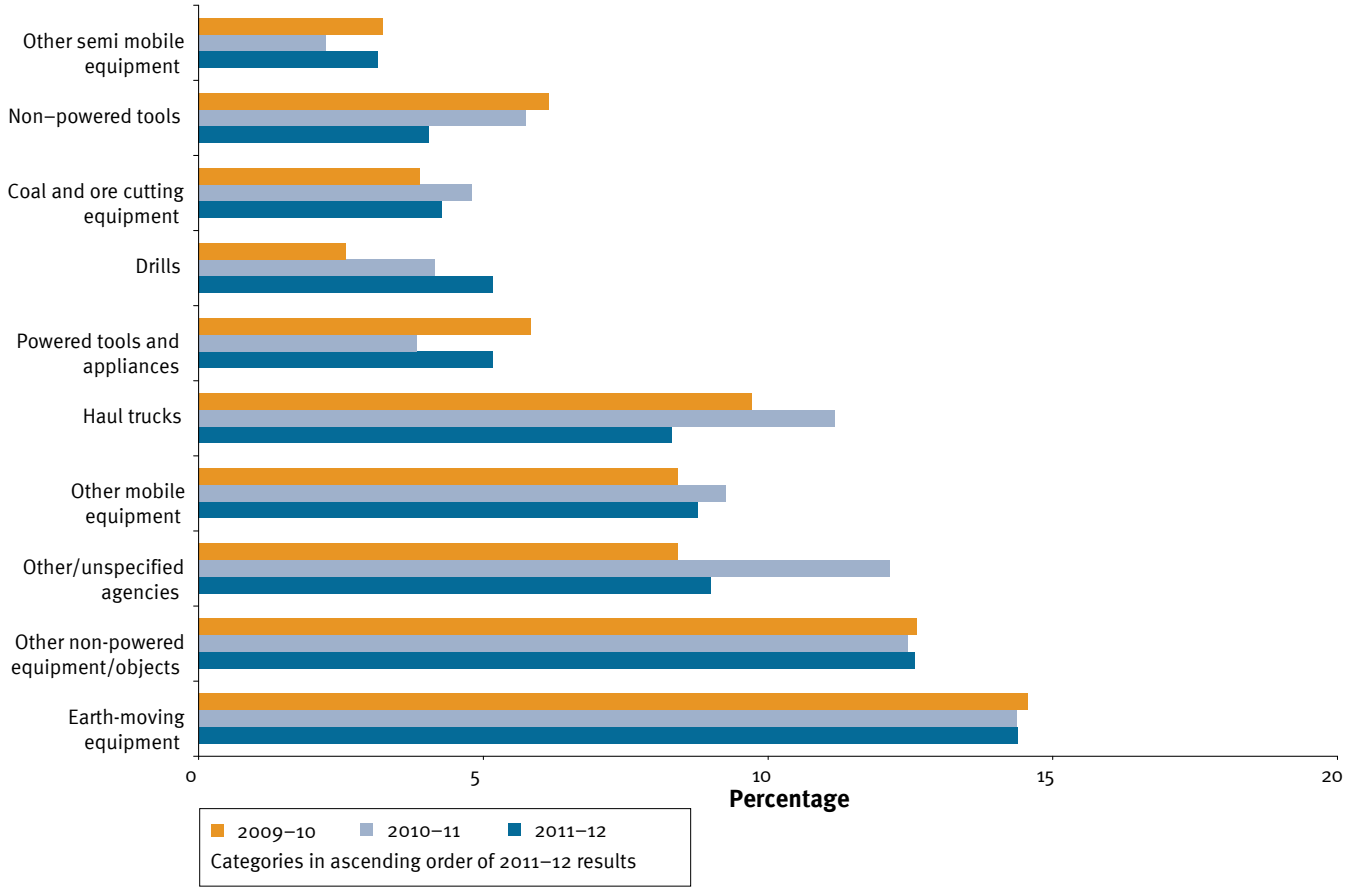
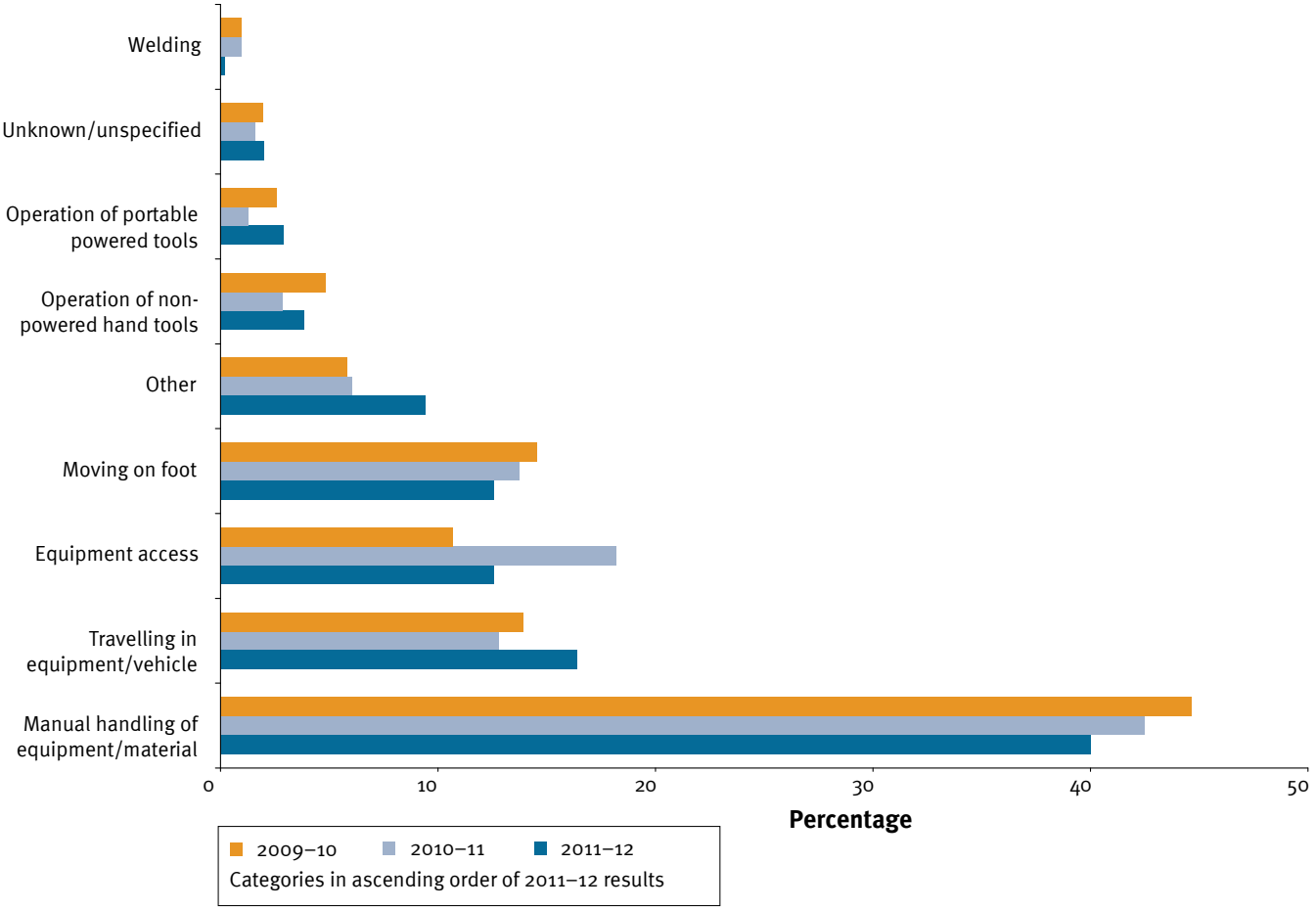


Figure 5.5: Occurrence class of injuries: activity (the activity that was principally involved in, or most closely associated with the injury), 2009–12



5.1 Age analysis of injury classification data

The breakdown of age across the coal industry, based on data collected for the Coal Mine Workers' Health Scheme, is shown in Figure 5.6. Note that the average age from 1997 to 2012 was 37 years old. The number of days lost per injury in relation to age is shown in Figure 5.7.

Table 5.1 provides a breakdown of Queensland mining LTIs (2004–12) across 10-year age groupings (20s, 30s, 40s and 50+).

The age-related injury profile is presented by a comparison of three classifications of injury data:

- nature of injury
- mechanism of injury
- occurrence class of injury.

The analysis identifies the highest classifications for each age group and gives an indication of which age group had the highest proportion of a single type of lost time injury.

Figure 5.6: Age distribution (coal industry), 1997–2012

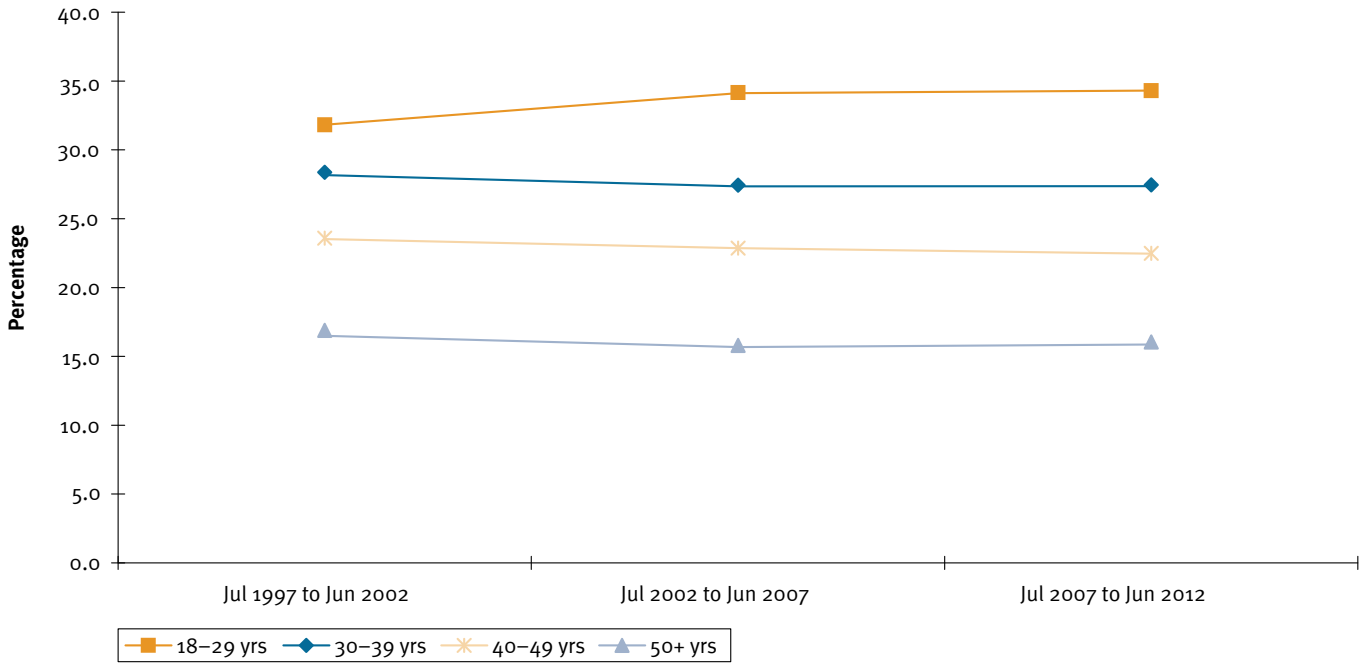


Figure 5.7: Average number of days lost per age group for lost time injuries, 2012

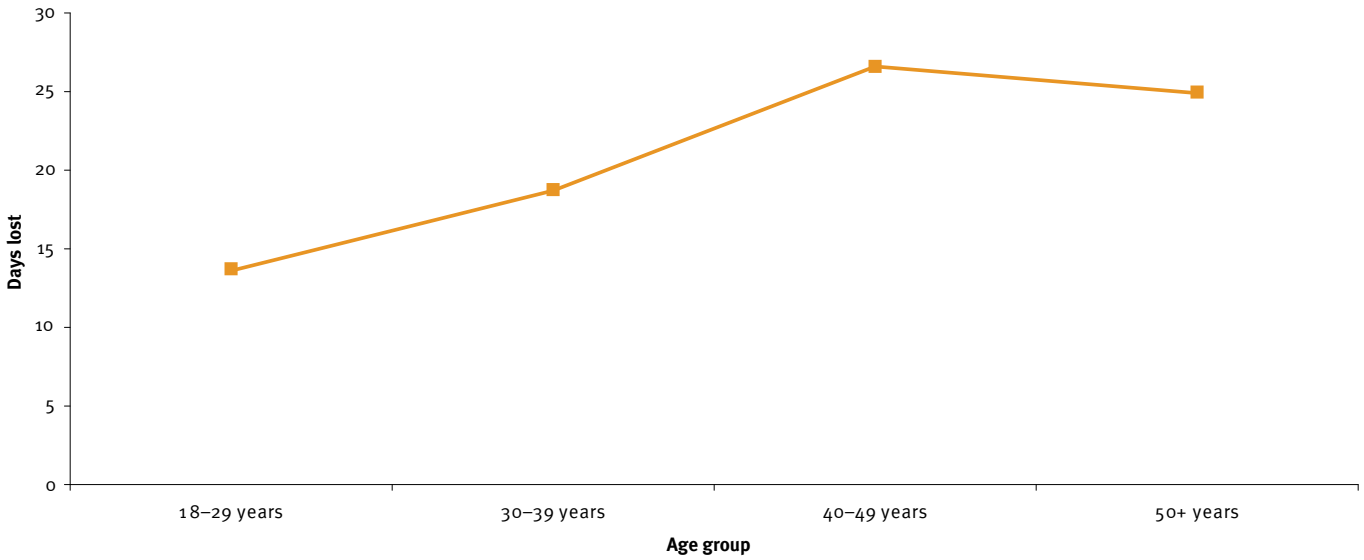


Table 5.1: Lost time injuries in all sectors—percentage of type across all groups, 2004–12

		18–29 yrs old (20s) 23.2% of all LTIs		30–39 yrs old (30s) 29.7% of all LTIs		40–49 yrs old (40s) 25.8% of all LTIs		50+ yrs old (50s) 21.3% of all LTIs	
		% in age group	% of all LTIs	% in age group	% of all LTIs	% in age group	% of all LTIs	% in age group	% of all LTIs
Nature of Injury *	Sprain/strain	34.0	7.9	46.3	13.8	45.4	11.7	48.4	10.3
	Fracture (not of vertebral column)	15.1	3.5	13.8	4.1	14.8	3.8	12.8	2.7
	Other and unspecified injury	6.8	1.6	6.8	2.0	7.8	2.0	8.6	1.8
	Open wound	9.7	2.2	5.2	-1.5	6.1	1.6	7.4	1.6
	Contusion with intact skin surface/crush	8.3	1.9	7.3	2.2	7.1	1.8	4.3	0.9
	Burn	5.4	1.3	3.6	1.1	2.1	0.6	1.6	0.3
	Foreign body (not superficial skin injury)	3.8	0.9	2.5	0.7	2.1	0.6	1.0	0.2
	Disorder of muscles/tendons/other soft tissue	2.2	0.5	2.2	0.7	2.6	0.7	2.6	0.6
	Traumatic amputation	2.7	0.6	1.0	0.3	1.9	0.5	1.9	0.4
	Multiple injuries	2.4	0.6	1.4	0.4	0.9	0.2	2.6	0.6
Mechanism of Injury *	Fall/slip/trip on the same level	12.4	2.9	11.4	3.4	16.0	4.1	13.8	2.9
	Muscular stress–lift/lower/carry object	8.6	2.0	11.8	3.5	9.1	2.4	10.7	2.3
	Fall/slip/trip from a height	6.0	1.4	7.6	2.2	11.3	2.9	12.6	2.7
	Being hit by moving object	11.1	2.6	7.9	2.4	7.0	1.8	6.7	1.4
	Being hit by falling object	9.8	2.3	6.6	2.0	6.0	1.5	7.3	1.5
	Muscular stress–no object being handled	5.6	1.3	6.2	1.8	6.8	1.8	6.9	1.5
	Motion of moving vehicle	3.8	0.9	6.6	2.0	6.3	1.6	6.6	1.4
	Trapped between stationary and moving object	7.9	1.8	5.9	1.8	3.9	1.0	3.5	0.7
	Muscular stress–handling object not lift/lower/carry	3.2	0.7	5.2	1.5	4.7	1.2	6.6	1.4
	Hitting stationary object	2.7	0.6	3.7	1.1	5.0	1.3	4.3	0.9
Occurrence class of injury *	Working on equipment	24.6	5.7	17.3	5.2	16.3	4.2	17.1	3.6
	Moving on foot	14.6	3.4	13.3	3.9	17.1	4.4	19.2	4.1
	Travelling in equipment/vehicle	9.0	2.1	13.5	4.0	13.3	3.4	14.7	3.1
	Other manual handling	10.3	2.4	12.1	3.6	13.0	3.3	13.0	2.8
	Other	8.9	2.1	10.2	3.0	8.4	2.2	5.9	1.3
	Other equipment access e.g. moving about	3.8	0.9	4.2	1.3	6.4	1.7	4.5	1.0
	Operation of non-powered hand tools	6.0	1.4	4.3	1.3	4.1	1.1	3.1	0.7
	Descending–ground/floor involved	2.7	0.6	3.7	1.1	4.4	1.1	3.6	0.8
	Loading/unloading from vehicles	3.5	0.8	4.0	1.2	3.3	0.8	3.3	0.7
	Operation of portable powered tools	3.3	0.8	3.5	1.0	1.9	0.5	3.1	0.7

* Only the top 10 occurring categories have been used for each injury classification

Dragline, Meandu Mine, Queensland
Photo: DNRM

6. Lead performance indicators

Lead indicators or positive performance indicators (PPIs) are measures of pre-emptive actions or initiatives that assist in preventing workplace injury and disease. This is considered a more proactive approach than the use of lag indicators, such as the lost time injury system which, by their nature, measure the event or its impact after it has occurred.

Questions in relation to PPIs have been included in the Queensland Mining and Quarrying Industry Census since 2007–08. The questions cover areas of risk management, audits, reviews and HPIs and are designed to collect data on safety and health issues concerning both employees and contractors.

The data are presented in the graphs listed below:

- Figure 6.1: Sites with a register of key hazards on site, 2009–12
- Figure 6.2: Sites where key hazards on site are identified using a formal system, 2009–12
- Figures 6.3.1–6.3.3: Sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2009–12
- Figure 6.4.1–6.4.3: Workers and contractors routinely involved in conducting formal risk assessments, 2009–12
- Figure 6.5.1–6.5.3: Audits (internal and external) conducted in the previous 12 months, 2009–12
- Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2009–12
- Figure 6.7.1–6.7.3: Workers involved as auditors in internal audits during the previous 12 months, 2009–12
- Figure 6.8: Sites with a formal reporting system for capturing and reporting high potential incidents, 2009–12
- Figure 6.9: Improvement actions resulting from investigations into high potential incidents, 2009–12
- Figure 6.10: Number of high potential incidents, 2009–12

Safe mine — proximity detection system, Meandu Mine
Photo: DNRM

Figure 6.1: Sites with a register of key hazards on site, 2009–12

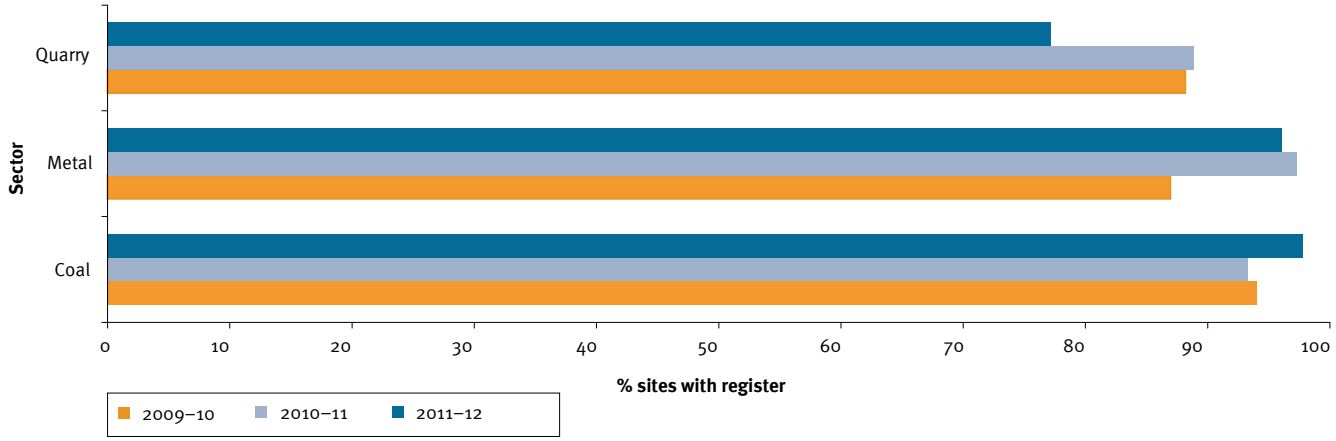


Figure 6.2: Sites where key hazards on site are identified using a formal system, 2009–12

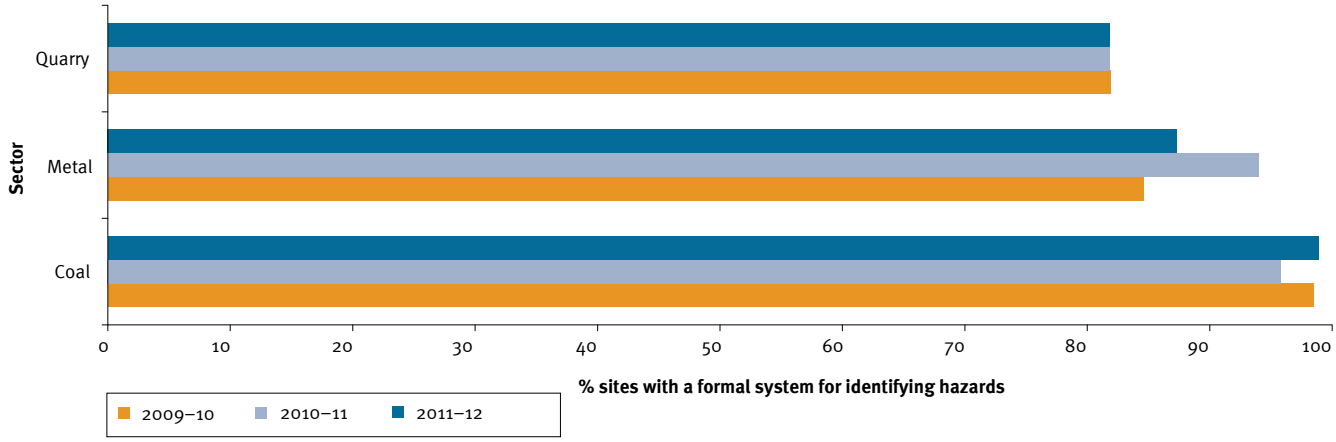


Figure 6.3.1: Coal sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2009–12

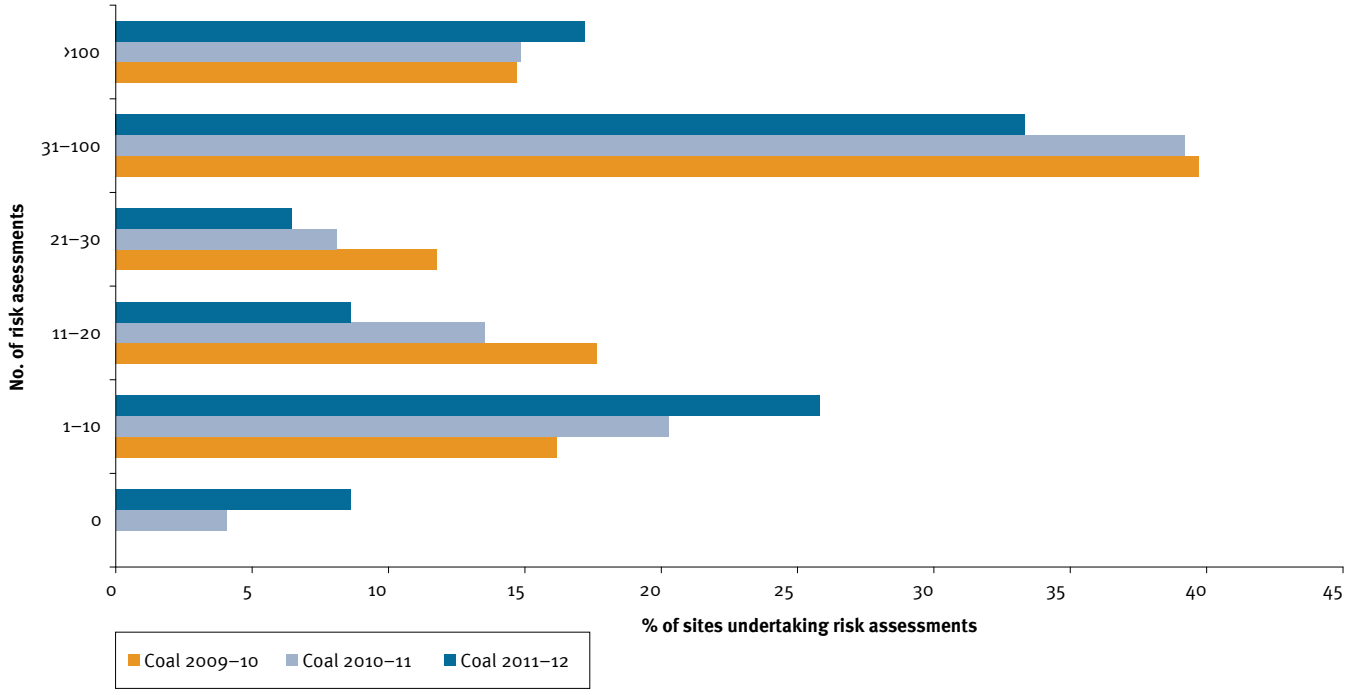


Figure 6.3.2: Metalliferous sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2009–12

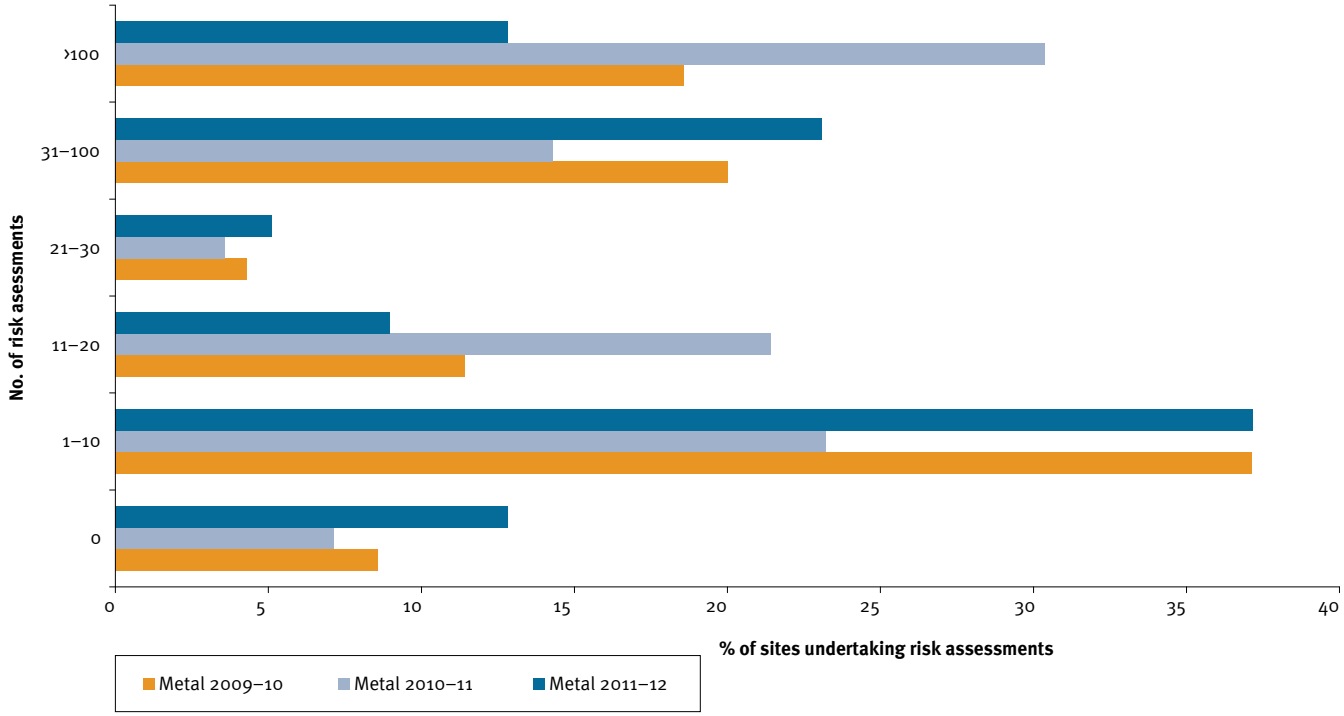


Figure 6.3.3: Quarry sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2009–12

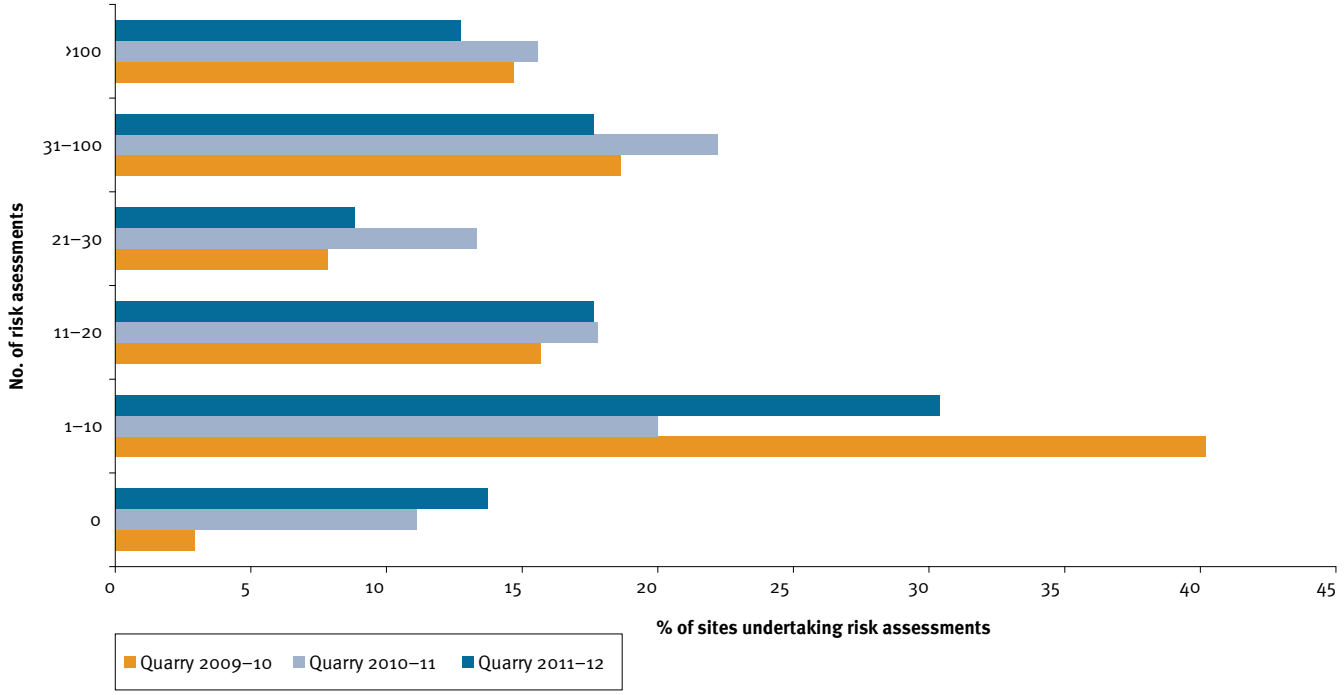


Figure 6.4.1: Coal sector workers and contractors routinely involved in conducting formal risk assessments, 2009–12

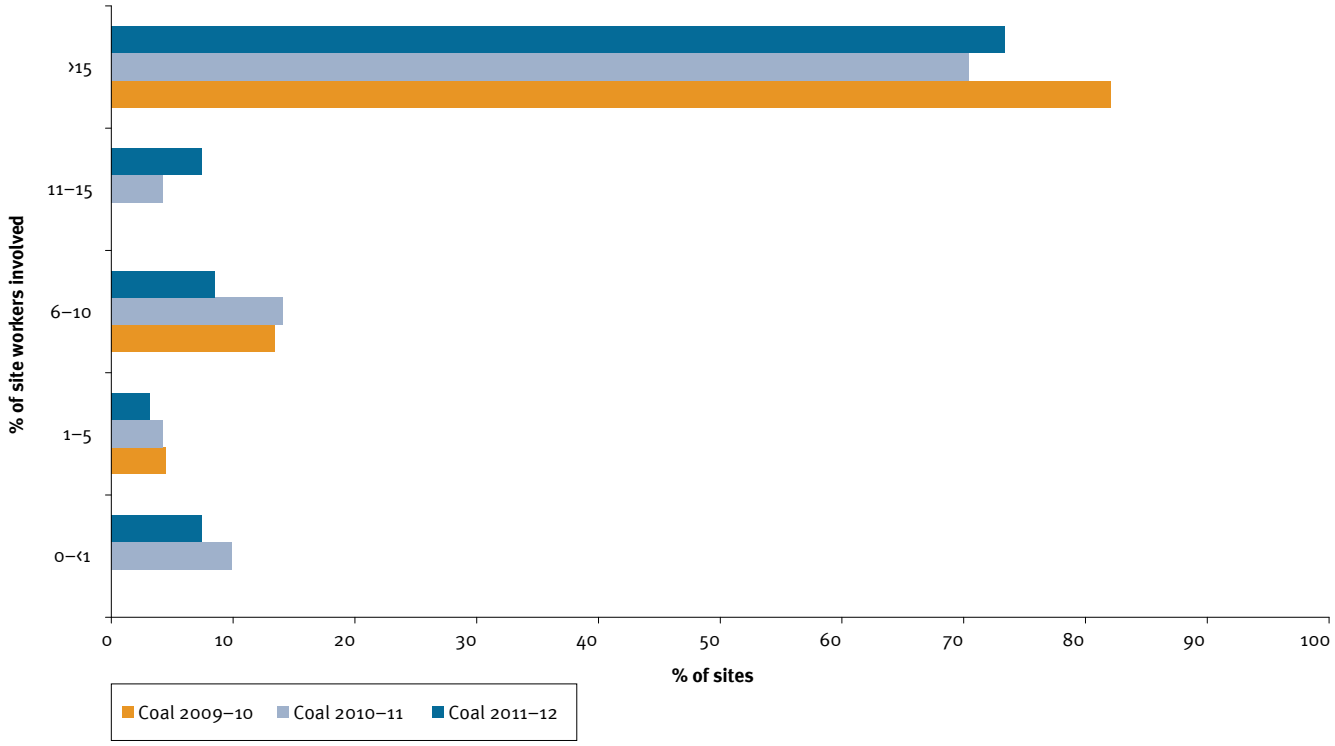


Figure 6.4.2: Metalliferous sector workers and contractors routinely involved in conducting formal risk assessments, 2009–12

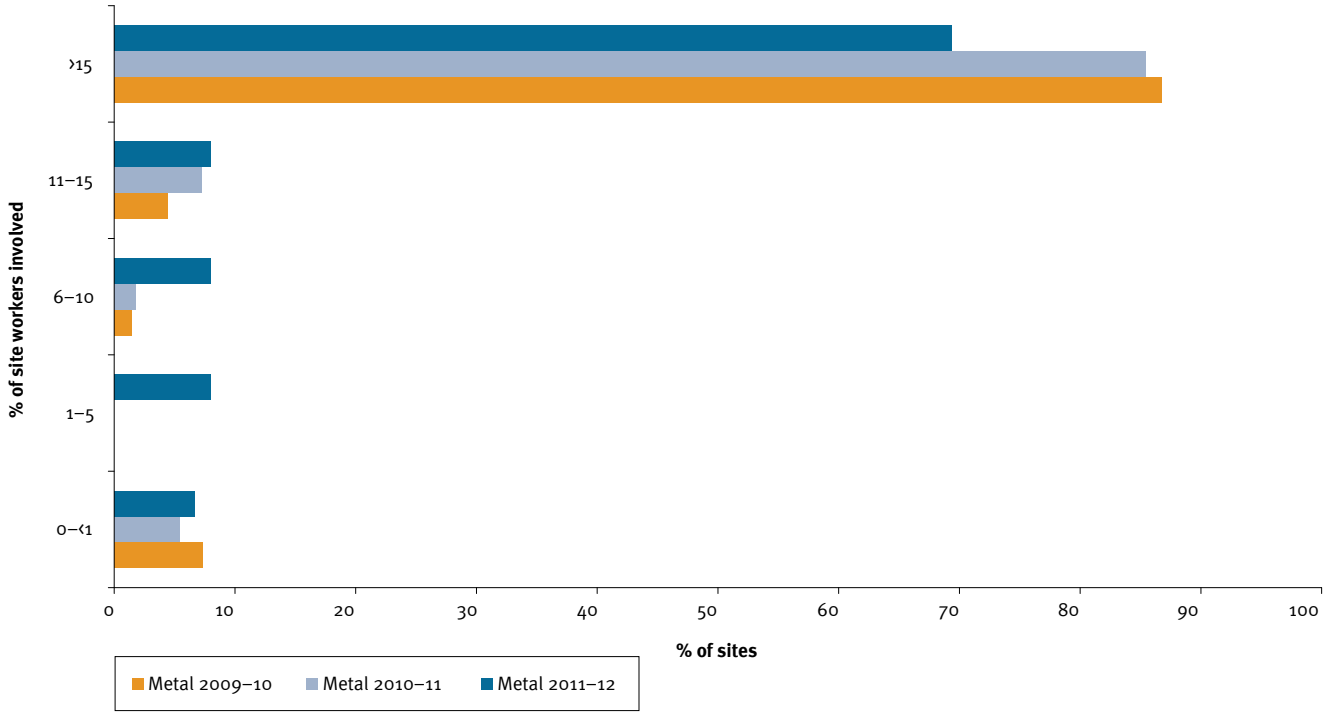


Figure 6.4.3: Quarry sector workers and contractors routinely involved in conducting formal risk assessments, 2009–12

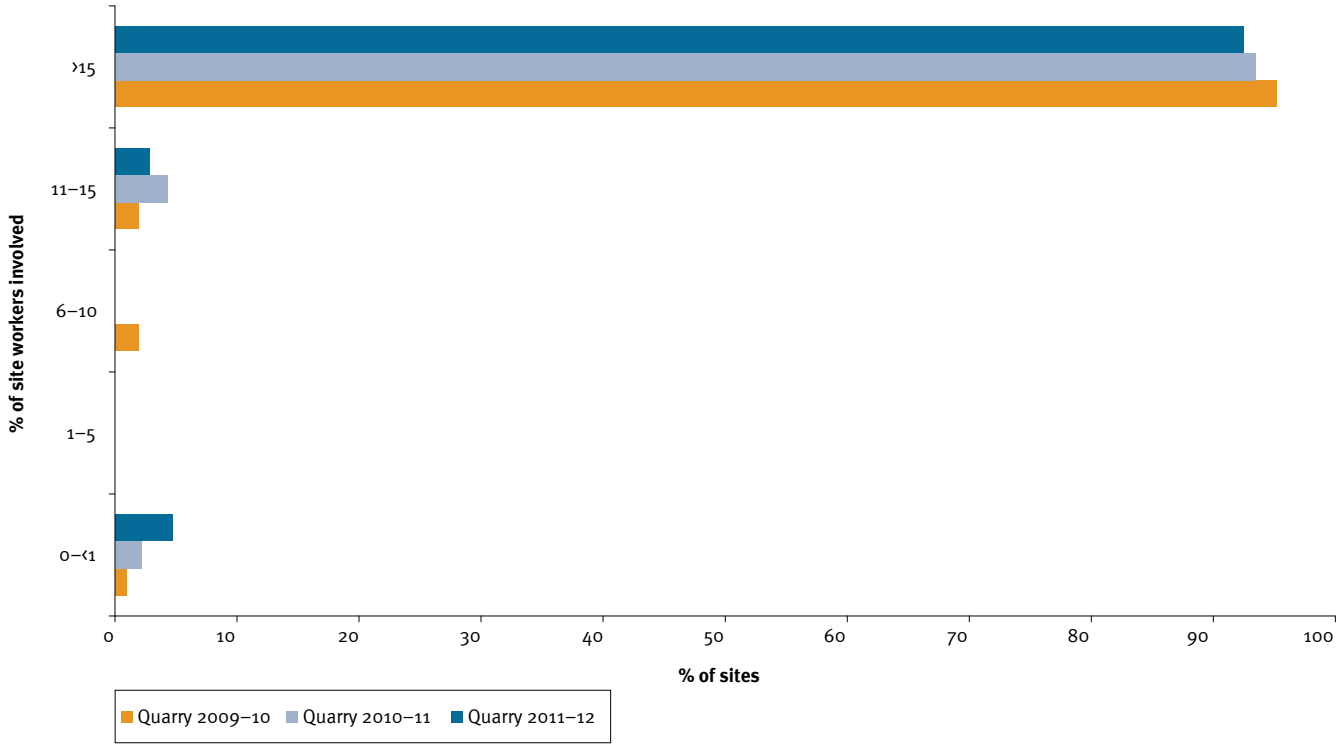


Figure 6.5.1: Coal sector audits (internal and external) conducted in the previous 12 months, 2009–12

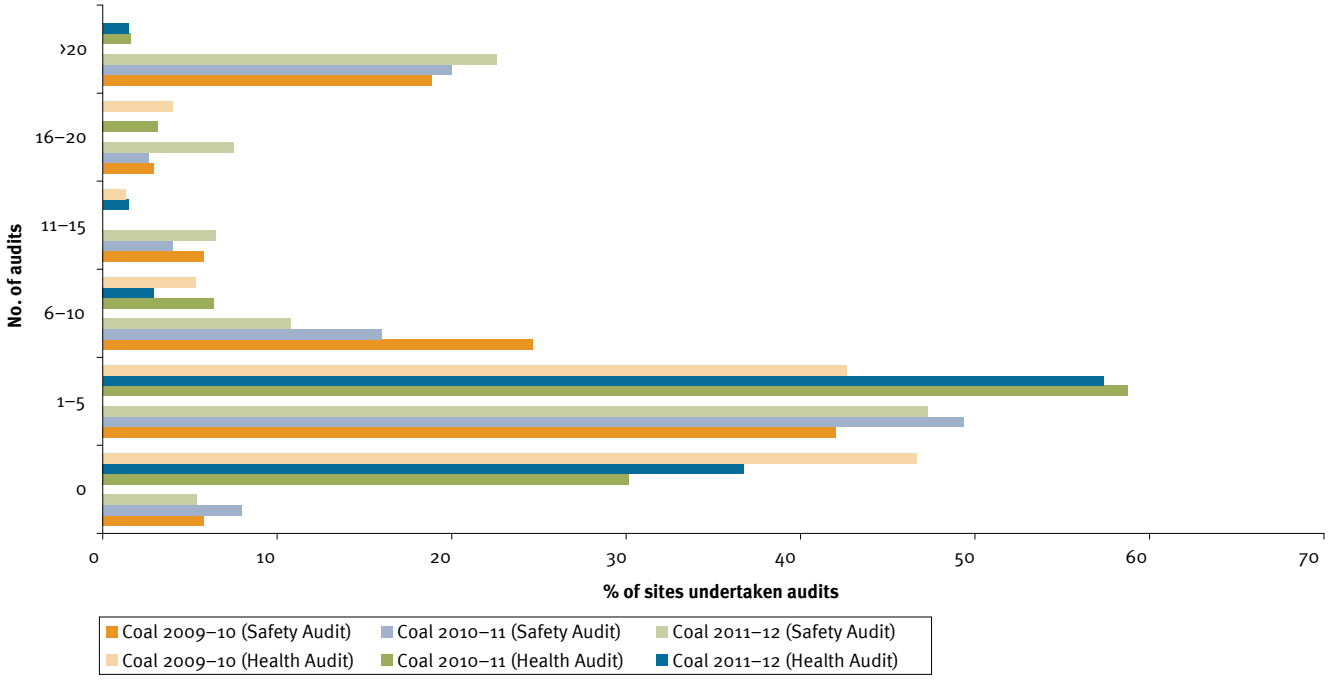


Figure 6.5.2: Metalliferous sector audits (internal and external) conducted in the previous 12 months, 2009–12

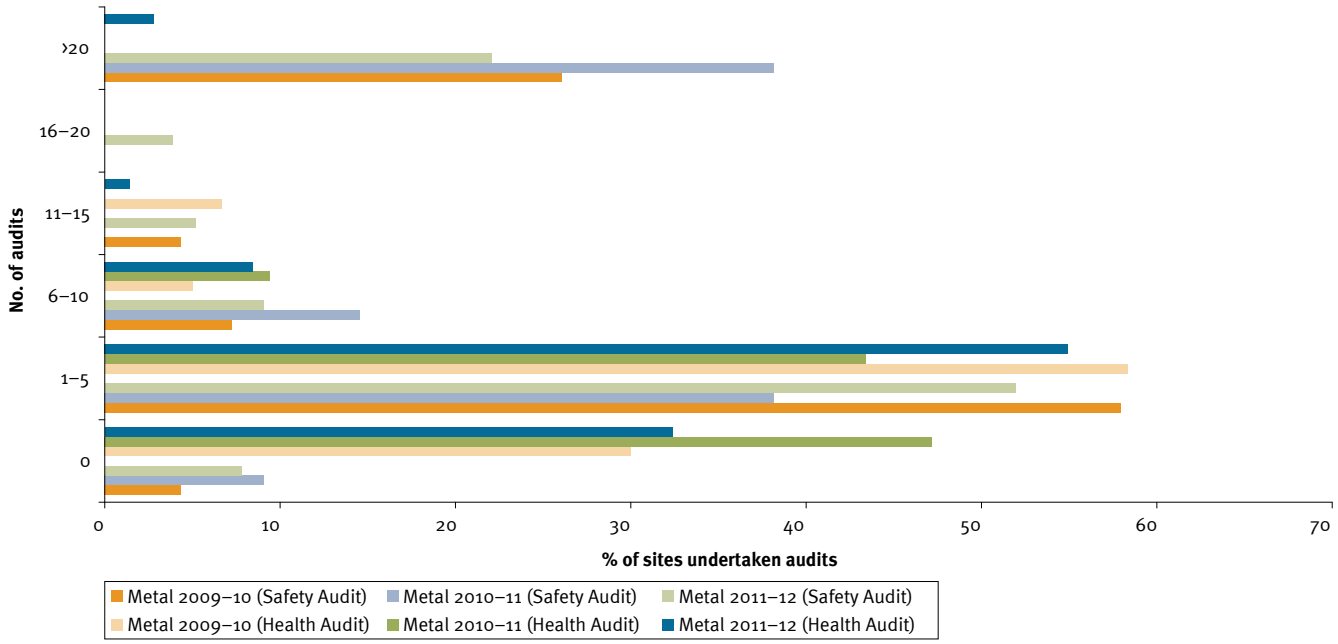


Figure 6.5.3: Quarry sector audits (internal and external) conducted in the previous 12 months, 2009–12

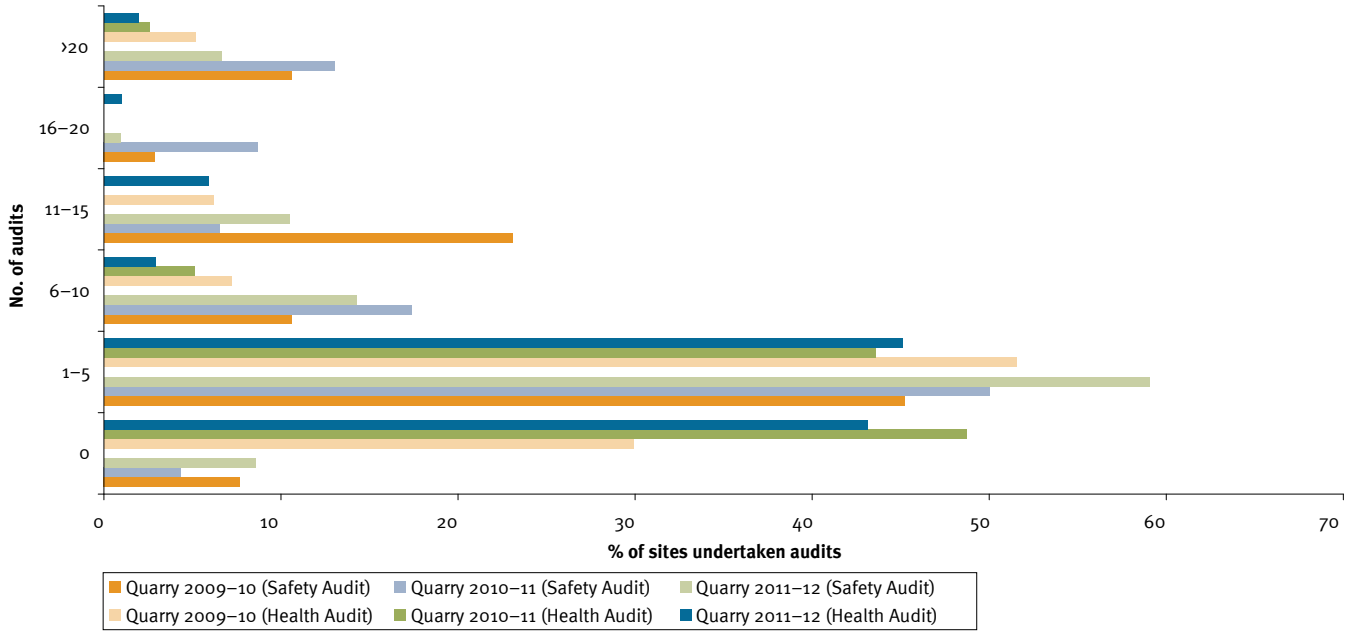


Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2009–12

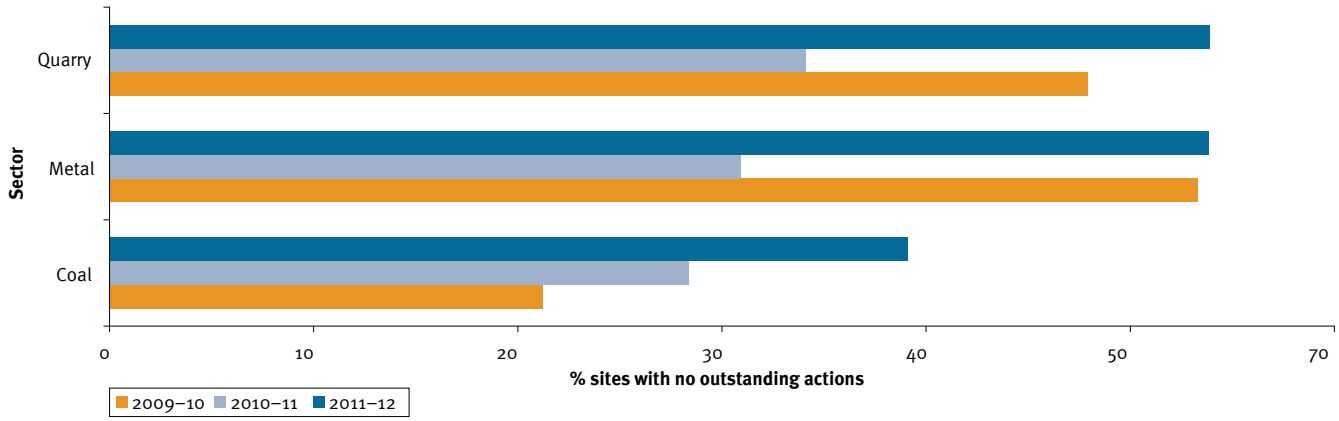


Figure 6.7.1: Coal sector workers involved as auditors in internal audits during the previous 12 months, 2009–12

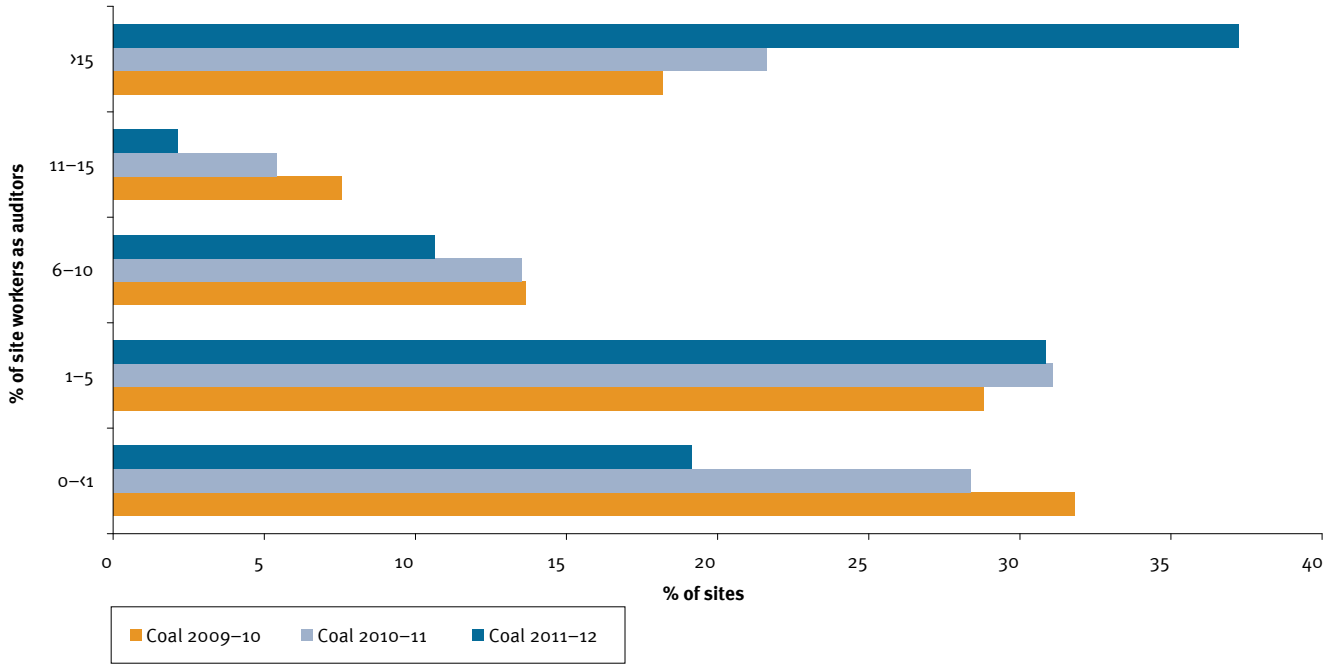


Figure 6.7.2: Metalliferous sector workers involved as auditors in internal audits during the previous 12 months, 2009–12

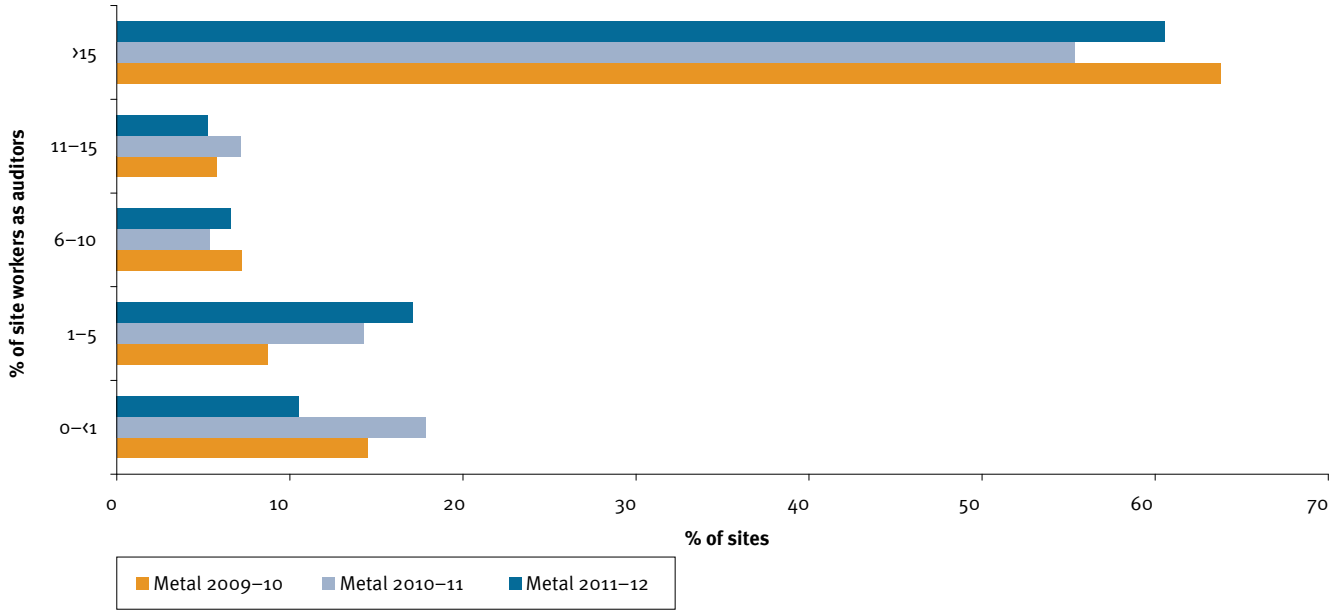


Figure 6.7.3: Quarry sector workers involved as auditors in internal audits during the previous 12 months, 2009–12

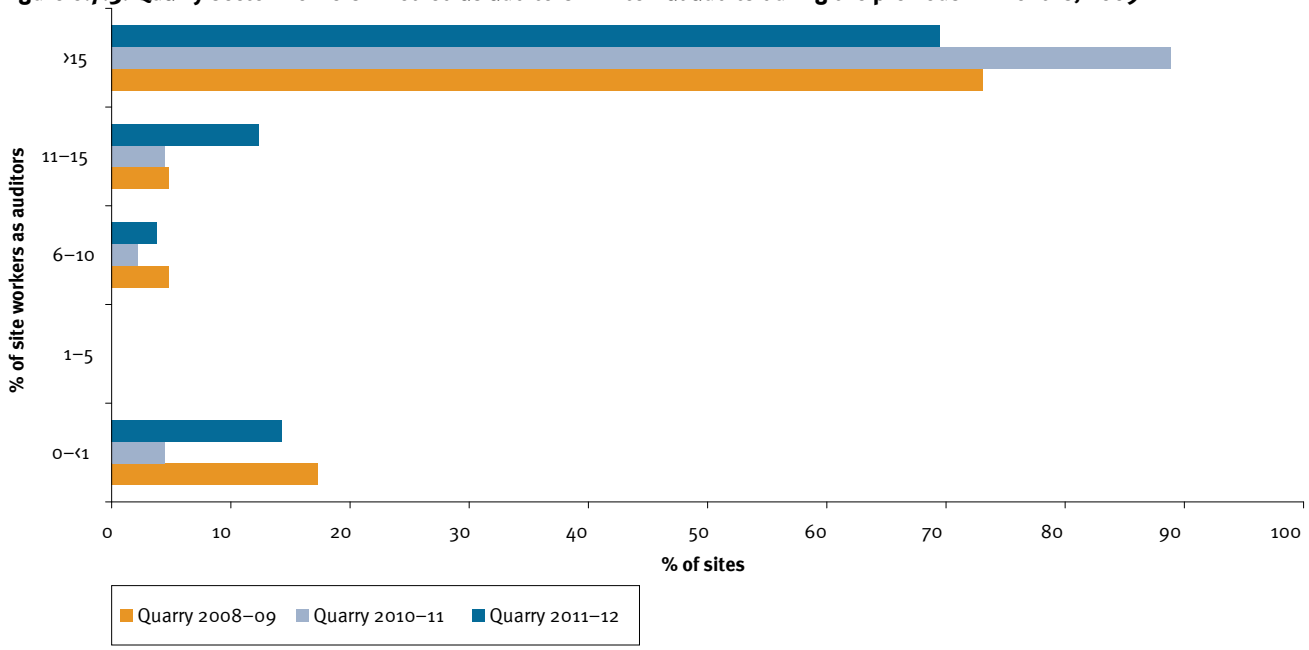


Figure 6.8: Sites with a formal reporting system for capturing and reporting high potential incidents, 2009–12

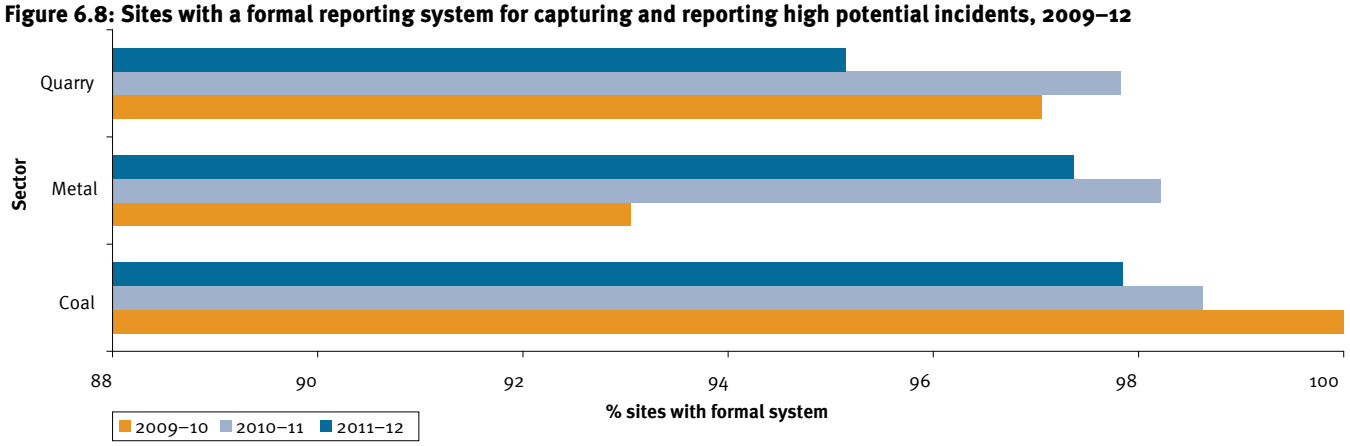


Figure 6.9: Improvement actions resulting from investigations into high potential incidents, 2009–12

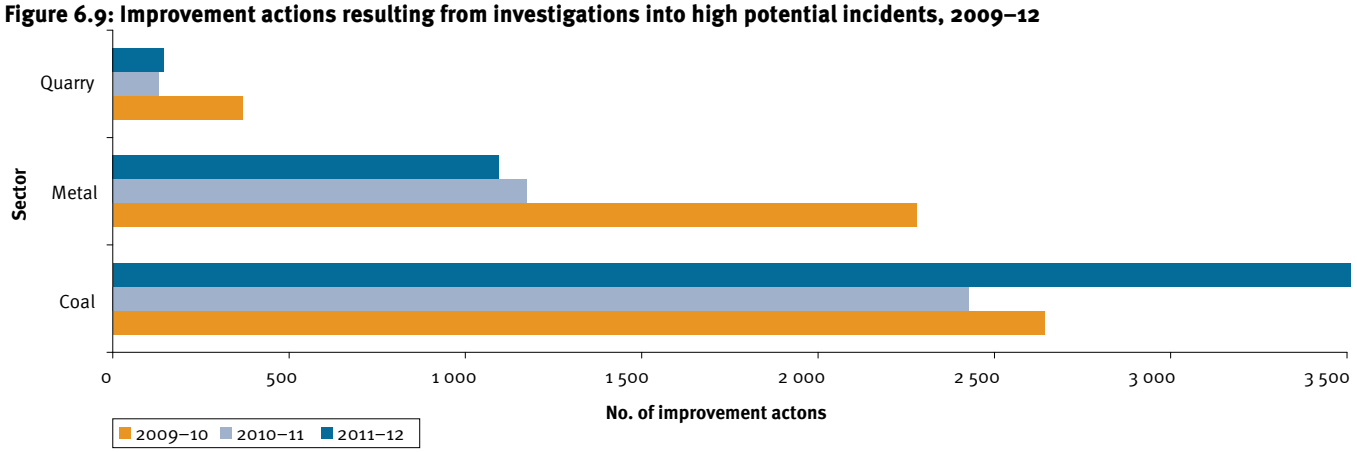
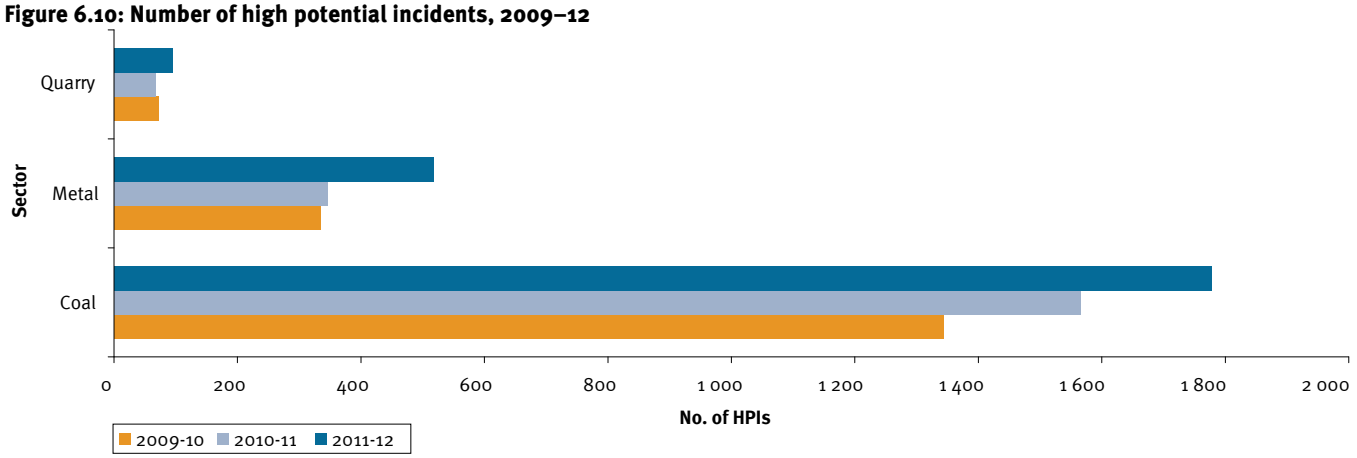


Figure 6.10: Number of high potential incidents, 2009–12



Coal truck in workshop with bin up, Meandu Mine, Queensland
Photo: DNRM

7. Health report

7.1 Coal mine health assessments

The Coal Mine Workers' Health Scheme requires that an employer must ensure a health assessment is carried out for each person who is to be employed, or is employed, by the employer as a coal mine worker. The assessment is carried out by a nominated medical advisor (NMA) in accordance with a departmental medical assessment form. The assessment must be carried out before the person is employed as a coal mine worker and periodically as decided by the NMA, but at least once every five years. There is no such regulated scheme in the metalliferous and quarrying sectors.

The most recent data regarding the number of health assessments carried out are given in Table 7.1.

There are over 100 000 medicals entered into the Coal Mine Workers' Health Scheme database. The earliest of these medicals dates from 1983. In 2011–12 there were 53 925 medicals received by the department's Health Surveillance Unit. There were 41 089 workers in the coal mining industry as at 30 June 2012, an increase of 8521 workers since 30 June 2011. Based on an estimated attrition rate of 10% it was forecast that approximately 11 780 medicals for new workers and 8220 medicals for existing workers (based on the five-yearly medical interval) would be required. Therefore, the total expected number of medicals for 2011–12 was approximately 20 000, leaving 33 925 to be accounted for.

Some of the additional 33 925 medicals received by the Health Surveillance Unit are possibly carried over from previous years. It is also possible that many of the medicals received are for prospective employees who are not coal mine workers. The latter is due to the fact that many employers or employment agencies are insisting that prospective employees obtain medicals prior to employment. This practice is counter to the premise of the Coal Mine Workers' Health Scheme under the Coal Mining Safety and Health Regulation 2011, which is to assess a person against the job they are doing or going to do.

To keep pace with the increasing number of health assessments received each year the department has initiated a dedicated high speed scanning project to address the backlog of health assessments. This considerable task is a vital step towards giving DNRM the ability to promptly retrieve coal mine workers' health assessments when required.

The department has also been investigating the automation of the Coal Mine Workers' Health Scheme. The main goal is to provide a more efficient means of recording the results of the medicals received by the department each year, as well as offering a more effective mechanism for reviewing and analysing the data. A technical solution that meets both confidentiality and security requirements has been identified and it is expected that it will be implemented with the finalisation of the National Mine Safety Framework legislative process.

7.2 Coal mine sickness, absenteeism and other lost time statistics

DNRM compiles statistics on lost time caused by sickness, injuries, unauthorised absence and other causes (e.g. annual leave or bereavement leave) based on monthly reports it receives from coal mines.(See Table 7.2.)

Table 7.1: Health assessments entered into the Coal Mine Workers' Health Scheme Database

	2007–08	2008–09	2009–10	2010–11	2011–12
New industry entrants	5 324	589	9 668	9 572	8 849
Periodic follow-up medicals for existing workers	2 770	290	6 807	5 947	5 689
Total	**8 094**	***879**	**16 475**	**15 519**	**14 538**
Medicals awaiting entry into the database**	10 157	26 633	58 545	60 617	91 320

* The low number of medicals entered in 2008-09 was due to a change to a new system which was not fully commissioned until June 2009

** Some of these medicals may have been done in previous years due to the NMAs not submitting medicals immediately upon completion.

Table 7.2: Distribution of lost time in coal mines, 2012

	Open-cut		Underground	
	Hours	%	Hours	%
Injury/compensation	49 208	2.4	8 192	3.4
Sickness and medical	711 521	34.2	127 108	52.1
Unauthorised absence	60 172	2.9	1 989	0.8
Other	1 260 426	60.6	106 657	43.7
Total	**2 081 327**	**100.0**	**243 946**	**100.0**
Hours lost per worker	**62**		**32**	

8. Workers compensation data

The mining industry injury compensation data are sourced from OESR and covers the 2011–12 financial year. The data include compensation information provided by WorkCover Queensland and the self-insurers through Q-Comp. The data in this report have been aggregated for each of the coal, metalliferous and quarry sectors.

There were 1611 workers compensation claims in the mining industry for 2011–12. The sector breakdown of claims is given below:

- the coal mining sector incurred 1073 claims costing $9.4 million ($8734 per claim)
- the metalliferous sector had 447 claims costing $4.6 million ($10 269 per claim)
- the quarry sector had 91 claims costing $489 685 ($5381 per claim).

The number of claims and associated costs for 2011–12 can be found in Table 8.1. These data do not capture smelting operations on mine sites in Queensland. Such operations are categorised separately in the OESR data under smelting operations, not mining.

Table 8.1: Workers compensation data - claims and associated costs, 2011–12

Nature of Injury		Coal mining	Metalliferous mining	Quarrying	All	Cost per claim
Bursitis	Payment $	198 052	77 191	9 080	284 323	28 432
	No. of claims	5	3	2	10	
Carpal tunnel syndrome	Payment $	210 170	64 790	0	274 960	34 370
	No. of claims	6	2	0	8	
Contusion, bruising and superficial crushing	Payment $	221 064	95 796	39 478	356 338	3 460
	No. of claims	51	44	8	103	
Deafness	Payment $	883 097	260 896	0	1 143 993	9 454
	No. of claims	98	23	0	121	
Dislocation	Payment $	378 682	122 187	0	500 869	20 870
	No. of claims	14	10	0	24	
Hernias	Payment $	176 649	149 597	18 452	344 698	14 362
	No. of claims	15	8	1	24	
Laceration or open wound not involving traumatic amputation	Payment $	109 447	139 545	15 684	264 675	2 701
	No. of claims	55	29	14	98	
Malignant neoplasm of mesothelium (mesothelioma)	Payment $	0	604 412	0	604 412	604 412
	No. of claims	0	1	0	1	
Other fractures, not elsewhere classified	Payment $	442 844	514 547	74 126	1 031 516	14 130
	No. of claims	44	22	7	73	
Soft tissue injuries due to trauma or unknown mechanisms with insufficient information to code elsewhere	Payment $	362 605	178 324	83 549	624 478	7 347
	No. of claims	63	18	4	85	
Trauma to joints and ligaments, not elsewhere classified	Payment $	640 973	164 722	19 445	825 140	7 302
	No. of claims	79	27	7	113	
Trauma to joints and ligaments, unspecified	Payment $	563 046	203 650	2 469	769 166	7 396
	No. of claims	72	31	1	104	
Trauma to muscles and tendons, not elsewhere classified	Payment $	1 115 924	152 727	4 094	1 272 744	15 713
	No. of claims	72	7	2	81	
Trauma to muscles and tendons, unspecified	Payment $	1 771 739	1 000 305	125 784	2 897 829	7 566
	No. of claims	235	127	21	383	
Trauma to tendon	Payment $	105 029	135 608	0	240 637	20 053
	No. of claims	8	4	0	12	
Unspecified injuries	Payment $	333 167	8 334	2 196	343 697	13 748
	No. of claims	19	5	1	25	
Other	Payment $	1 858 781	717 701	95 329	2 671 811	7 722
	No. of claims	237	86	23	346	
Total	**Payment $**	**9 371 270**	**4 590 332**	**489 685**	**14 451 287**	**8 970**
	No. of claims	**1 073**	**447**	**91**	**1 611**	

Figure 8.1: Workers compensation claims–major injury/illness types, 2007–12

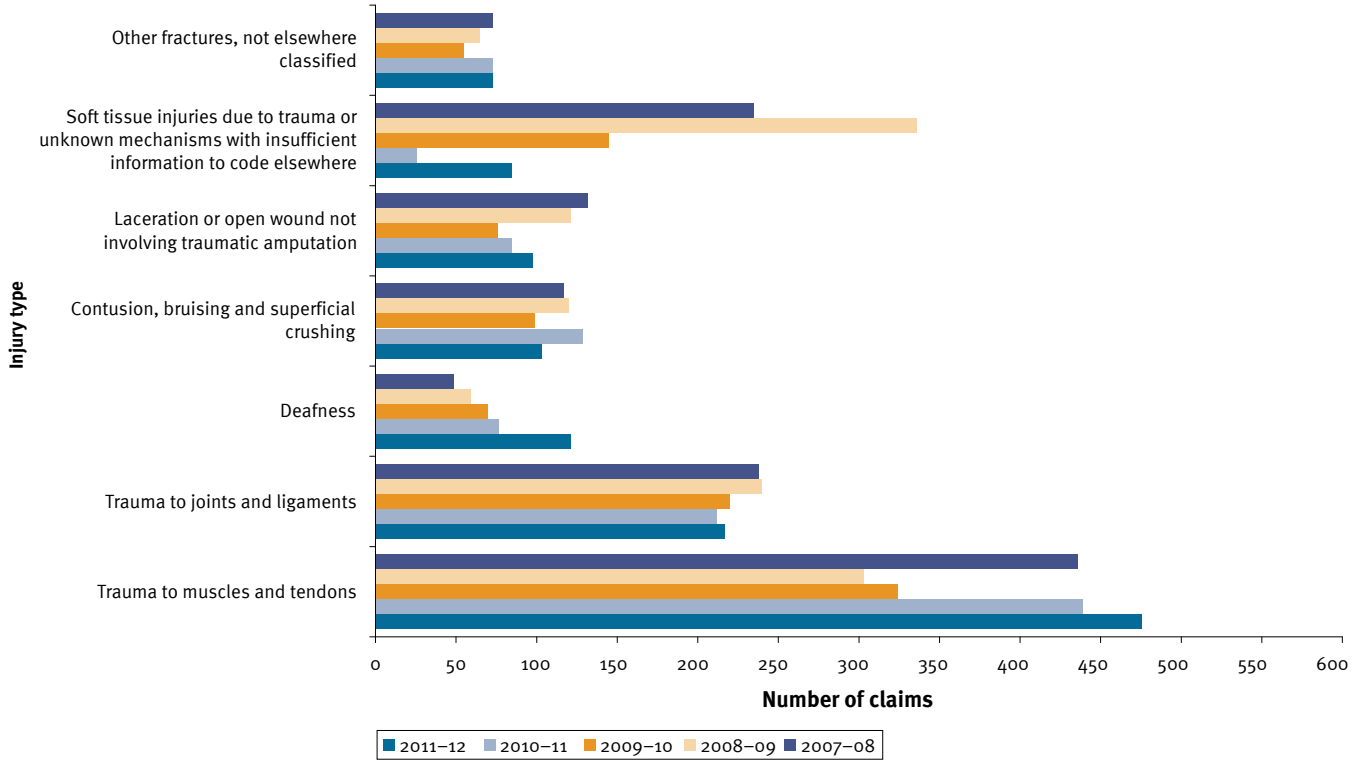


Figure 8.2: Five-year comparison of workers compensation claims per sector, 2007–12

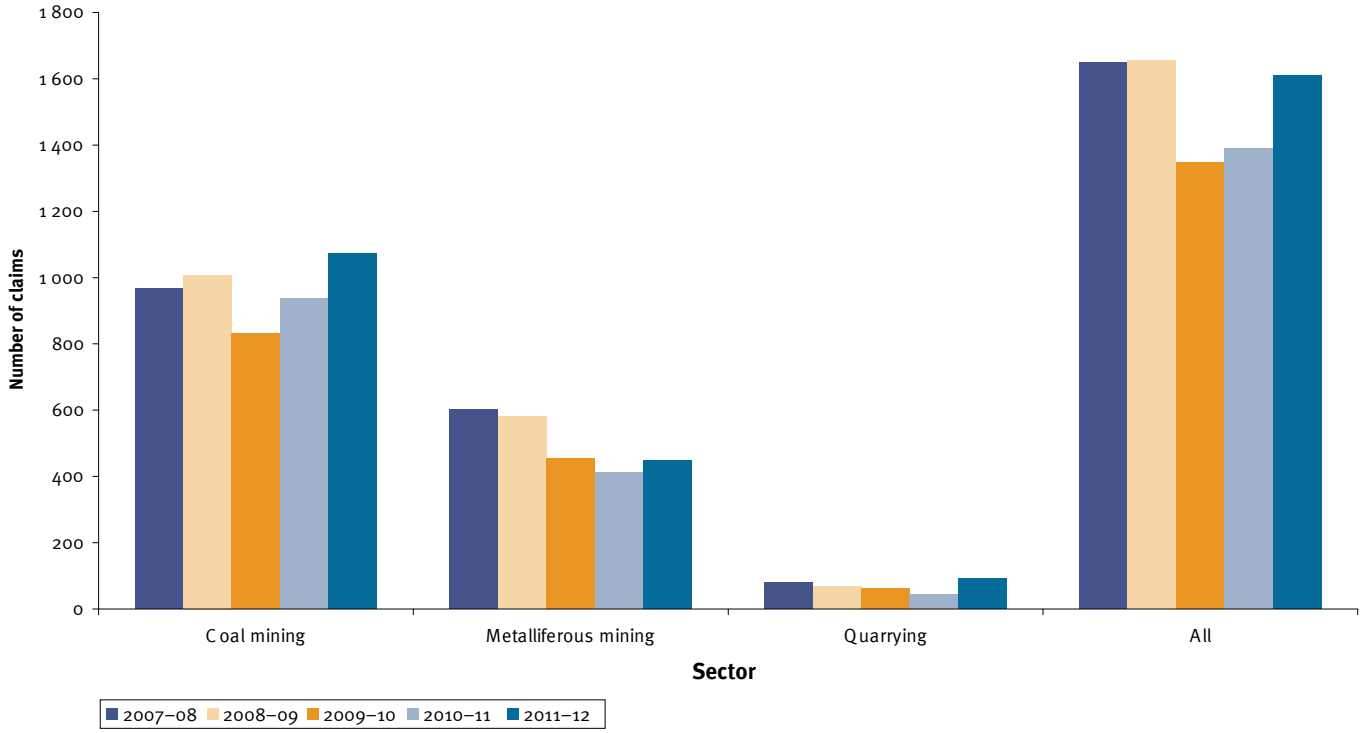


Photo: DNRM

9. Collection of information

Whenever an LTI or HPI occurs, the mine or quarry operator must submit a Queensland Mining Incident Report Form to the local mines inspector.

Large mines and quarries (with 10 or more employees) also provide a monthly summary that lists new and carryover LTIs and DIs, re-opened injuries, days lost and/or on alternative duties, and hours worked during the period. Data on the number of workers in the industry are sourced through the quarterly safety and health levy submissions from industry. The levy data are used to validate the hours of work data submitted and the levy data are given preference if there is a significant difference. Nineteen consecutive years of injury/disease data for coal and metalliferous mines are now available for analysis.

Copies of this report are available on the DNRM website www.dnrm.qld.gov.au

More detailed analysis of injuries in the mining and quarrying industry is available from:

Mine Safety and Health
Department of Natural Resources and Mines
PO Box 15216
City East Qld 4002
Telephone +61 7 3404 3143
minesafetystats@dnrm.qld.gov.au

Requests for information received during 2011–12 included the examples listed below.

- A mining company requested information on incidents relating to water truck accidents over a five-year period. The information provided was used for research purposes.
- Information was provided on the number of employees versus contractors in the mining industry. This information was used for research into fatalities to determine which group incurred the most; employees or contractors.
- Information on the number of accidents and incidents occurring on both coal and metalliferous exploration sites was provided to a mining company. This information was to be presented at a mining seminar.
- A safety and training coordinator at a Queensland coal mine requested information relating to the number of hand/finger/thumb injuries occurring over a three-year period in coal and metalliferous mines. This information was to be used in a mine presentation.
- A departmental officer requested information on the number of employees in the Queensland mining industry. This information was used in the production of maps used by other government departments and local councils in planning for housing, roads and other infrastructure.
- An underground mine manager requested safety statistics from all Queensland coal mines. This information was to be used to compare his mine with all Queensland coal mines.
- A federal government department requested information on the number and causes of fatalities in Queensland mines.
- An exploration site manager requested information on drilling rig incidents over a financial year. This information was to be used for research.
- A mine safety and health officer requested information on fire-related incidents in underground metalliferous mines. This information was to be used in a presentation to mine staff.
- Several mine sites requested statistical information relating to incidents occurring at all other sites. This information was to be presented to the workforce to show how their mine compared to other Queensland mines.
- A departmental officer requested statistical information relating to incidents occurring at quarry sites. This information was to be presented at a quarry seminar.
- A departmental officer requested statistical information on the Charters Towers region. This information was to be included in an article in a local newspaper giving details of the impact of the mining industry in the Charters Towers region.

Access to the lost time accident database

Industry can be provided with selected data from the departmental lost time accident database; information that was also used in the compilation of this report. Individual mine operators can obtain their data as well as the statistical sector-wide data. Mine operators can also use this data as a benchmark in the preparation of their safety management systems. The Mines Inspectorate uses the data when planning audit programs.

To request data, contact your regional Mines Inspectorate office:

Brisbane (Head Office): 07 3404 3143 or 07 3237 1631
Woolloongabba (South Region): 07 3238 3722
Rockhampton (Central Region): 07 4938 4340
Mackay (Central Region): 07 4967 1444
Townsville (North Region): 07 4799 7729
Mount Isa (North Region): 07 4747 2158

This report is delivered with the intention of providing useful information to industry organisations to build better safety and health management systems and processes across their operations.

The Mines Inspectorate welcomes suggestions for improvement and feedback on the report. Please call the DNRM Customer Service Centre 13 25 23 (within Australia) or +61 7 3404 6999 (outside Australia) with your comments.

Thanks are extended to the mining industry in Queensland for providing the data required to assemble this report.

Notes

Department of **Natural Resources and Mines**
www.dnrm.qld.gov.au

CC12-SAF028

Queensland Government