Department of **Employment, Economic Development and Innovation**

Queensland Mines and Quarries
Safety Performance and Health Report

1 July 2010 – 30 June 2011

Queensland Government

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Disclaimer

The data in this report are derived from the Department of Employment, Economic Development and Innovation (DEEDI) 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 DEEDI 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
DEEDI	Department of Employment, Economic Development and Innovation
DES	diesel engine system
DI	disabling injury
DPM	diesel particulate matter
EPC	exploration permit coal
HIAC	Health Improvement and Awareness Committee
HPI	high-potential incident
ICT	incident control team
LTI	lost time injury/disease
LTIFR	lost time injury frequency rate (injuries per million hours worked)
MTI	medical treatment injuries
NMA	nominated medical advisor
OESR	Queensland Office of Economic and Statistical Research
PPI	positive performance indicators
QMRS	Queensland Mines Rescue Service
QPS	Queensland Police Service
QRC	Queensland Resources Council
SCSR	self-contained self-rescuer
SHMS	safety and health management system
Simtars	Safety in Mines Testing and Research Station
SMS	safety management system
SSE	site senior executive
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.

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 2010 to 30 June 2011.

The responsibility for the regulation of mine safety and health lies with the Safety and Health Division of the Department of Employment, Economic Development and Innovation (DEEDI). Our aim in Safety and Health is to make a difference each day that will assist the mining industry in achieving its goal of Zero Harm.

The Queensland mining industry continues to maintain its prime position as one of the safest in the world. Safety and Health, through the Mines Inspectorate, takes its role in the maintenance and improvement of this statistic very seriously. We must never become complacent and forget the lessons of history, and we should look to innovation and new technology as we strive for continuous improvement.

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

We must always remember the families who have lost a loved one as a result of a mine accident. The awareness of these accidents makes us ever more vigilant and watchful in the pursuit of a truly safe and healthy industry. It is, however, disappointing for me to report that there have been three fatalities in the mining industry this year. I extend my sympathy and condolences to the family and friends of these mine workers. I can assure them that the Mines Inspectorate continues to work relentlessly to eliminate such tragedies. There is no greater contribution we can make than to ensure that our people get home from work safely, live a healthy life at work and, importantly, continue that healthy status when they retire.

While fatal accidents have increased, the combined lost time injury frequency rate for all Queensland mines continues to improve—down from 3.8 injuries per million hours worked in 2009–2010 to 2.9 in 2010–2011[1]. Queensland continues to have one of the highest standards in mining safety and health statistics in the world and I am determined to maintain this position.

It has been a busy year for Safety and Health. The Mines Inspectorate and Simtars devoted their time, knowledge and experience in assisting New Zealand authorities with the Pike River disaster where 29 miners lost their lives in an underground coal mine explosion. Simtars' gas monitoring and interpretation staff and the Deputy Chief Inspector of Coal Mines travelled to the Pike River mine site soon after the event. They performed critical roles in the operation from the initial phases until the time the mine was safely sealed. The Mines Inspectorate was also involved in an audit of the remaining New Zealand underground coal mines to provide a level of assurance to the New Zealand Government that safety issues are being addressed.

In addition, I have been appointed as a commissioner of New Zealand's Pike River Royal Commission, which is currently investigating this terrible tragedy. There is no doubt the recommendations that will flow from this Royal Commission will have implications for mining jurisdictions around the world; and I am fully committed to adopting any safety recommendations that have applicability in Queensland.

Our dedication to ensuring that Queensland mining legislation remains one of the safest in the world has again meant a heavy commitment to the National Mine Safety Framework activities by both me and the Mines Inspectorate staff this year. The Mines Inspectorate has also participated in other important matters, such as the development of the mining Codes of Practice, regular Steering and Legislation Group meetings and New South Wales, Western Australian and Queensland regulators' technical group meetings. The technical group meetings were instrumental in identifying what was required by the three major mining states for non-core mining regulations.

It is also important to reiterate the Mines Inspectorate's continued investigation 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 preventing people coming to harm.

I urge you to continue your good work in helping to make Queensland one of the safest and healthiest mining jurisdictions in the world. I commend this report and its contents to you. Please use this data to identify areas of weakness and to address them so that we continue to improve in our ongoing pursuit of Zero Harm. In doing so we will take another step closer to ensuring that all mine workers can return home to their families, healthy and safe, after each and every shift.

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

1 The combined lost time injury frequency rate has reduced since the Commissioner for *Mine Safety and Health Queensland Mines Inspectorate Performance report 2010–11* was published. The figures reported are collected from mine sites on an ongoing basis and are not finalised until the following year. For this reason, there may be variation in the figures reported in the two reports.

Summary from the Chief Inspectors of Mines

The year in review was marred by the tragic loss of three lives. One death is one too many and we feel the loss of our three fellow miners. Not as much, of course, as the families and mates of those who are no longer with us. To these people, we again send our heartfelt condolences.

The three fatalities in the reporting period were attributed to:

- the rollover of a light vehicle at a surface coal mine
- the collapse of a shaft at a small opal mine
- the explosion of a truck tyre during maintenance at a surface coal mine.

The first fatality of the year occurred when a contractor, on his penultimate day at the mine as the contract was concluding, was fatally injured when the 4WD vehicle in which he was riding as a rear passenger, rolled over and he was ejected from the vehicle. The deceased, who was not wearing a seatbelt, was fatally injured when the vehicle rolled on him.

The fatality at the opal mine occurred when an 81-year-old miner was found deceased, buried up to his neck in mullock. He was in a previously mined section of 1.2 m high underground workings, just off the bottom of a 3.5 m deep shaft within the Yowah opal mining designated fossicking area. It has been concluded that the deceased was alone mining the mullock, placed as backfill in an adjacent shaft, when the material has moved unexpectedly and engulfed him.

The incident involving the tyre decompression is still under investigation and a report is being prepared for the Coroner.

Save for the tragic losses of three lives, the injury statistics for the year are most encouraging. There has been a further decline for most statistical indicators. Year-on-year we are experiencing declining trends but we still have some way to go to reach Zero Harm. Figures show:

- lost time injuries down from 307 to 273 injuries
- days lost to lost time injuries down from 14 325 to 11 027 days
- days lost to disabling injuries down from 10 977 to 10 313 days
- lost time injury plus disabling injury severity rate down from 311 to 230 days lost per million hours worked
- lost time injury plus disabling injury duration rate down from 34.4 to 27.4 days per injury
- lost time injury frequency rate down from 3.8 to 2.9 injuries per million hours worked.

The following indices suffered a slight increase:

- disabling injuries up from 428 to 505
- medical treatment injuries up from 402 to 811 (for the first time the number of medical treatments include those from metalliferous mines and quarries)
- permanent incapacities up from 47 to 57 injuries or illnesses.

One measurement that did rise, and with which we are more than comfortable, is the number of incidents reported. We have expressed concern for some time that not all high-potential incidents were being reported. If incidents are not being reported, then latent hazards are not being addressed industry-wide and that is of significant concern. With mature safety systems the number of incidents will decrease, but given that many of the systems in the mining industry are not mature, we expect that this type of incident will remain high for some time.

The duration rate is considered one of the most important measures of safety and health performance as it is a calculation of the severity of injuries, not just the number of injuries. The parameter showed an improvement this year, down 13.5% on last year. This improvement occurred in underground coal (56%), metalliferous surface (39%) and metalliferous underground (19%) mines.

The duration rate in the coal surface sector increased marginally over the previous year, up 4.7%, and the quarrying sector was the worst it has been for the past five years with a 98.2% increase since last year.

The cause of the increase in the quarrying sector was four significant lost time injuries at four separate operations for a total of 639 lost days. Injuries included two fractures of the vertebral column (one from falling, the other from being struck by a falling object), a broken leg caused by a fall from a ladder and a significant contusion caused by a falling object.

Most other major lag indicators showed an improvement with the exception of the disabling injury frequency rate, which rose from 5.3 to 5.4, and the permanent incapacity frequency rate, which increased from 0.58 to 0.61. The total recordable injury frequency rate was 17.1. For the first time, the number of medical treatments includes those from metalliferous mines and quarries. Last year the total recordable injury frequency rate of 16.9 was for coal mines only.

The increase in the disabling injury frequency rate does not represent a significant decrease in performance. Though there was an increase in the number of disabling injuries from last year, there was also an increase in the number of workers in the industry. Therefore, the number of hours worked, as reported to the department, increased from 81.4 million to 92.9 million. This reflects the impact on the various frequency rates due to an increase in hours worked.

We believe the increase in the number of permanent incapacities is due to better data collection by the department and improved reporting by industry. Though this is an unwanted statistic, the industry is commended on its improved reporting in this area. There is still a wide discrepancy between workers' compensation figures and permanent incapacity reporting and it is very difficult to draw parallels between the two as the data sets differ significantly in their descriptors.

The most concerning increase, as stated at the start of this summary, is the number of fatalities and the fatal injury frequency rate, which is up from 0.01 to 0.03.

During the year, mines inspectors undertook 1512 inspections and 179 audits. From those inspections some 345 directives were issued, as were 1334 notices of substandard conditions or practices (SCPs). During the period we also investigated some 107 complaints on a wide range of issues and a significant number of man hours were expended in investigating high-potential incidents and compliance matters.

Unfortunately, at times we have had to initiate other compliance actions including a Level 5, which is prosecution. A prosecution is initiated in accordance with a Level 5 Administrative Response under the Mines Inspectorate Compliance Policy, if there is sufficient evidence to provide a realistic prospect of conviction; and it has been decided in accordance with the Compliance Policy that it is in the public interest to prosecute. The Mines Inspectorate Compliance Policy can be found at www.mines.industry.qld.gov.au

The following mine-related incidents were brought to the attention of the Commissioner for Mine Safety and Health and prosecution was recommended:

- grievous bodily harm as a result of driving an underground shuttle-car over a person's leg—a deputy pleaded guilty and returned his statutory certificate of competency
- the operation of a load haul dump vehicle in an underground coal mine after the methane sensor was bypassed—both a contract supervisor and a contract deputy pleaded guilty and were fined
- grievous bodily harm as a result of a forklift rolling forward and crushing a person's ankle—this matter is still before the court
- grievous bodily harm as a result of the rollover of an underground cement agitator truck due to overloading and defective braking—this matter is still before the court
- fatal injury due to loss of control of a water truck—the site senior executive, the truck operator and the contract company that owned the truck all pleaded guilty and were fined.

In other mine-related incidents, the Compliance Policy requires that accountability is achieved through Level 3 and Level 4 compliance meetings. In the previous 12 months there were nine such compliance actions in the coal division, and nine in the metalliferous and quarrying division. Three of these meetings were chaired by the respective Chief Inspector, while district or regional inspectors chaired the remainder.

A number of industry fora were conducted throughout the year. In the coal sector, the following topics were discussed:

- proximity detection and collision avoidance
- fatigue management
- blast fume prevention and management
- surface mine haul road design and maintenance.

In the metalliferous and quarries sector, these initiatives were implemented:

- proximity detection and collision avoidance
- fatigue management
- traffic management and slope stability workshop
- opal and gemstone miners workshops.

A significant proportion of both Chief Inspectors' time has been dedicated to the national harmonisation process, essentially the National Mine Safety Framework, both core (all states and territories) and non-core (NSW, WA and Qld). With the bulk of the time spent on non-core, we have been working closely with the other two large mining states, NSW and WA, to ensure, wherever possible, alignment with these two jurisdictions.

It is planned that toward the end of this calendar year, or early next year, a series of presentations will be undertaken around the state to provide information and to receive feedback on the intended course of action in Queensland. We believe that at the pick point people will see little change; it is and continues to be the state government's desire that there will be no diminution of existing safety and health laws in the mining industry. This is based on the fact that, when compared with comparable industries throughout the world, Queensland's legislation and safety and health statistics are without peer.

On 19 November 2010, 29 miners lost their lives in a horrific explosion at the Pike River Coal Mine, near Greymouth, on the South Island of New Zealand. Shortly after the initial incident, both Simtars and the Mines Inspectorate provided assistance to the mine and the New Zealand Department of Labour. This assistance continues. Also, the Queensland Commissioner for Mine Safety and Health has been appointed to the Royal Commission set up by the New Zealand Government to examine and report on the causes of the explosions at the mine, subsequent loss of life and all aspects of the safety regulatory regime and rescue operations at the mine.

We wish to thank the contributors to this report for their assistance. We look forward to this report being used to assist industry in identifying safety and health priorities for 2011–12 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)

Table 1: Key performance indicators, 2010–11

	Number of lost time injuries (LTIs)		Number of disabling injuries (DIs)		Number of medical treatment injuries (MTIs)		Number of high-potential incidents (HPIs)		LTI days lost@		Number of DI days	
	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11
Coal surface	138	134	214	248	264	368	988	1 228	6 461	6 570	4 234	5 201
Coal underground	64	45	115	175	138	272	356	338	3 884	1 207	2 828	3 418
Coal subtotal	202	179	329	423	402	640	1 344	1 566	10 345	7 777	7 062	8 619
Metalliferous surface	47	41	28	33	n.a.	92	214	183	1 785	942	1 264	863
Metalliferous underground	30	25	70	49	n.a.	49	121	162	1 560	1 047	2 610	831
Metalliferous subtotal	77	66	98	82	n.a.	141	335	345	3 345	1 989	3 874	1 694
Quarries	28	28	1	0	n.a.	30	72	68	635	1 261	41	0
TOTAL	**307**	**273**	**428**	**505**	**402**	**811**	**1 751**	**1 979**	**14 325**	**11 027**	**10 977**	**10 313**
Exploration	2	12	4	12	2	45	2	5	3	198	20	125

\# Rounded to whole numbers
* Rounded to 1 decimal place
n.a. not available
@ Days lost to LTIs include lost time days and days on alternative duties

Table 1: Key performance indicators, 2010–11 (continued)

	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	
	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11	09–10	10–11
Coal surface	3.1	2.7	144	131	46.8	49.0	239	234	30.4	30.8	44.8	50.2	36	40	0	2
Coal underground	6.2	3.7	376	100	60.7	26.8	651	385	37.5	21.0	10.3	12.0	5	10	0	0
Coal subtotal	3.7	2.9	188	125	51.2	43.4	316	264	32.8	27.2	55.1	62.2	41	50	0	2
Metalliferous surface	3.1	2.3	119	53	38.0	23.0	203	101	40.7	24.4	15.0	17.9	3	1	0	0
Metalliferous underground	3.3	2.6	173	107	52.0	41.9	463	192	41.7	25.4	9.0	9.8	2	1	0	1
Metalliferous subtotal	3.2	2.4	139	72	43.4	30.1	301	133	41.3	24.9	24.0	27.6	5	2	0	1
Quarries	12.3	9.0	278	407	22.7	45.0	296	407	23.3	45.0	2.3	3.1	1	5	1	0
TOTAL	**3.8**	**2.9**	**176**	**119**	**46.7**	**40.4**	**311**	**230**	**34.4**	**27.4**	**81.4**	**92.9**	**47**	**57**	**1**	**3**
Exploration	n.a.	13.2	n.a.	217	0.3	8.3	n.a.	354	1.4	13.5	0.357	0.913	0	0	0	0

\# Rounded to whole numbers
* Rounded to 1 decimal place
n.a. not available
@ Days lost to LTIs include lost time days and days on alternative duties

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 a mine site from 1 July 2010 to 30 June 2011. 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 Employment, Economic Development and Innovation (DEEDI) Queensland Mining Industry Lost Time Accident Database.

The data reported are collected from mine sites on an ongoing basis and via monthly and quarterly summaries. The data set is usually not complete until well into the following financial year as mines often take some considerable time to supply the data. An arbitrary cut-off, in order to begin data analysis, usually takes place in September or October each year when most, but not all, of the data have been received. For this reason there will be minor changes in data reported for the previous year as 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 will be released on a quarterly basis at www.mines.industry.qld.gov.au

1.1 Fatal injuries

There were three fatal injuries in the mining industry in Queensland in 2010–11. This compares with one fatality in 2009–10. Figure 1.1 shows the declining trend in mine fatalities since 1900, with major fatality events annotated on the graph.

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 2010 the Miners Memorial Day was held at the Community Centre in Blackwater and was attended by over 300 members of the local mining community. Figure 1.2 shows that the number of employees in the industry has steadily increased. Unfortunately fatalities have also risen when compared to 2009–10.

Figure 1.1: Fatalities in Queensland mines, 1900–2011

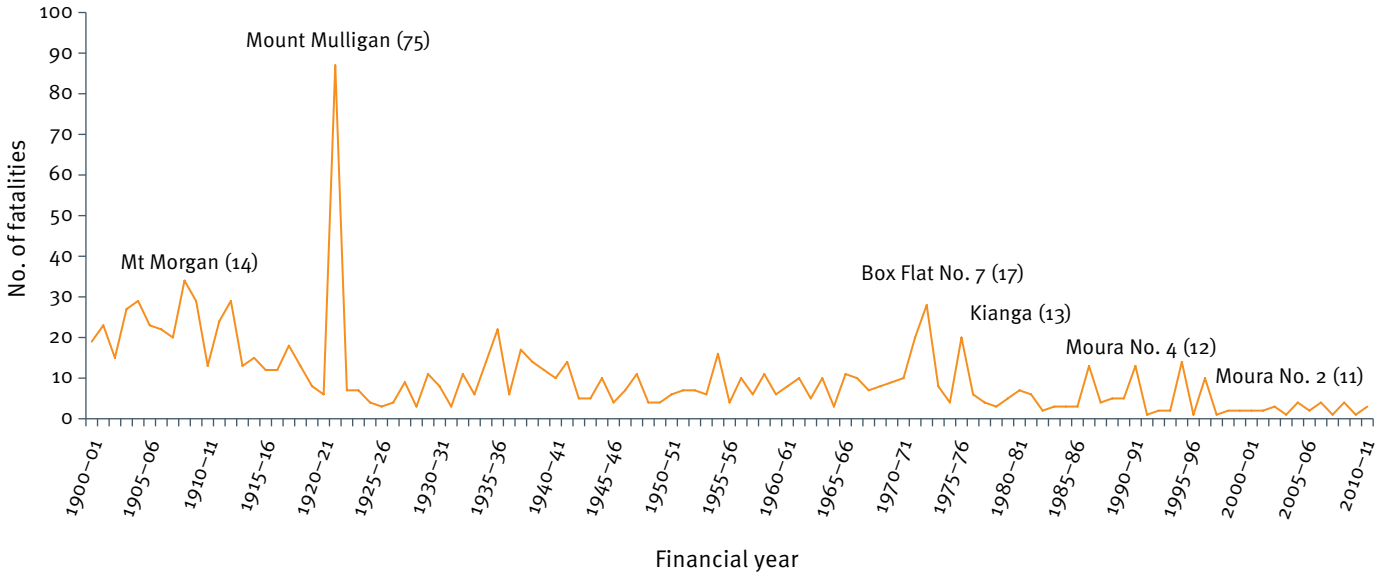
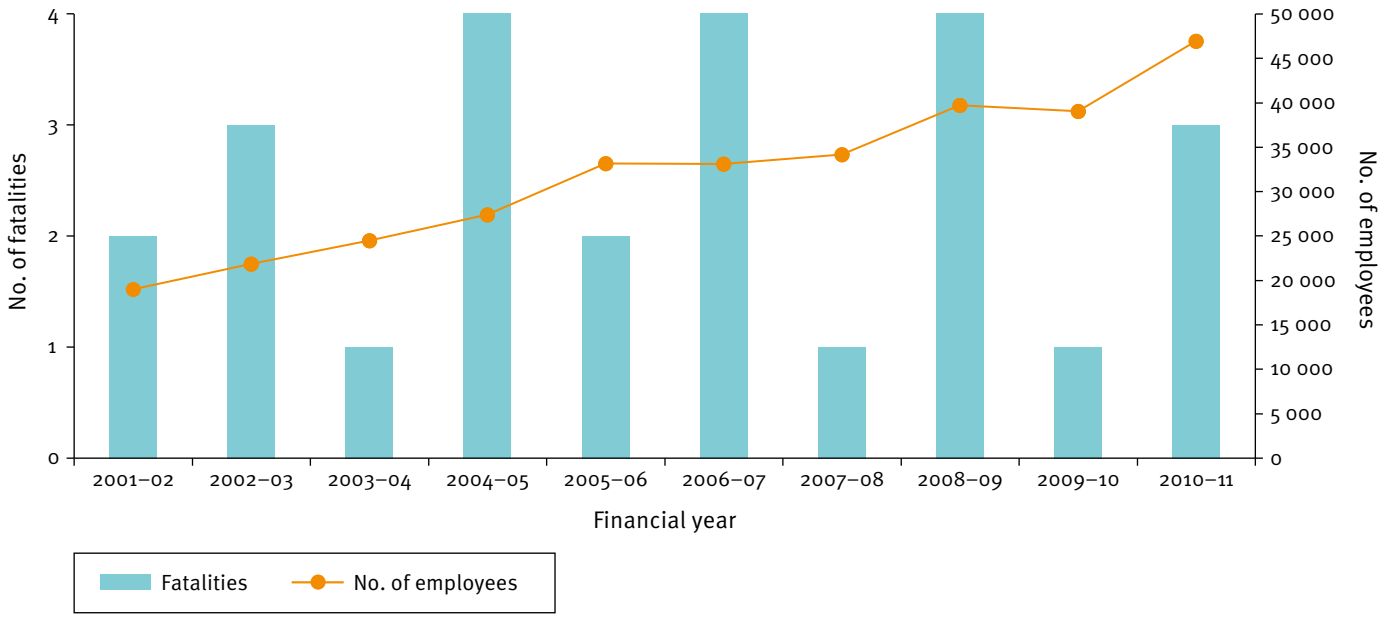


Figure 1.2: Employee numbers and fatalities (all sectors), 2001–11



Coal mines

There were two fatal accidents in coal mines in 2010–11 compared with zero fatalities in 2009–10.

The first accident occurred on 31 August 2010 when a light vehicle containing four persons was involved in a single vehicle rollover on a haul road near the top of a ramp. The driver of the vehicle had lost control on a recently watered section of road.

The second accident occurred on 18 December 2010 when a truck driver was fatally injured when a tyre ruptured. The tyre had just been changed and the truck driver was lowering the jack.

Metalliferous mines and quarries

There was one fatal accident in the metalliferous mines and quarries sector in 2010–11 compared with one in 2009–10.

The accident occurred on 6 March 2011 when an opal miner, working alone in old shallow underground workings on a mining claim, was fatally injured while removing mullock used to backfill a shaft. The material flowed and engulfed him.

1.2 Permanent incapacities

There were 57 permanent incapacities reported for 2010–11, compared with 47 permanent incapacities in 2009–10. These were:

- 40 from surface coal (36 in 2009–10)
- 10 from underground coal (5 in 2009–10)
- 1 from metalliferous surface (3 in 2009–10)
- 1 from metalliferous underground (2 in 2009–10)
- 5 from quarries (1 in 2009–10).

This increase is due to Safety and Health's continuing campaign to improve the reporting of permanent incapacity injuries and illnesses. The campaign came about because the Mines Inspectorate was concerned that a complete record of all permanent incapacities that occurred throughout the mining industry in Queensland was not being collected. Industry reporting of permanent incapacities, particularly in the surface coal sector, has improved dramatically in the 2007–10 period.

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. This is to be done on an approved form. The approved forms for submission of such 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, indicates that there were 1391 claims in the mining industry. Of these, 77 were for deafness or noise-induced hearing loss. It is not possible to determine which of the other 1314 claims 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.

Table 1.1: Permanent incapacities reported by mines, 2010–11

Injury/disease	Incapacity type	Incapacity description—the outcome where known is shown in brackets	Qty
Coal exploration			
Contusion with intact skin/crush	Upper limbs—hand/finger/thumb	Finger crushed	1
Coal surface			
Deafness	Head—ear	Binaural hearing loss	21
Disorder of muscle/ tendon/other soft tissue	Upper limbs—hand/finger/thumb	Finger injury	1
	Upper limbs—shoulder	Shoulder injury	1
	Upper limbs—shoulder	Injury to shoulder region—resulting in mild loss of all movements	1
Hernia	Abdomen/pelvic region	Subjective symptoms and signs such as pain, dysaethesia or tenderness following hernia repair	1
Nerve/spinal cord injury	Trunk—back (upper/lower)	Aggravation of lumbar spondylosis (degenerative condition)	1
Sprain/strain	Lower limbs—ankle	Severe high ankle strain	1
	Trunk—back (upper/lower)	Lower back injury	1
	Trunk—back (upper/lower)	Back injury	1
	Unspecified locations		4
Traumatic amputation	Upper limbs—hand/finger/thumb	Finger amputation	1
	Upper limbs—hand/finger/thumb	Amputation of thumb and index finger as well as fractured wrist	1
Unspecified injury	Other/unspecified injury	Upper extremity injury other than in this table of injuries	1
		Moderate to severe aggravation or acceleration of pre-existing disease	1
		Other injury other than in this table of injuries	2
Coal underground			
Deafness	Head—ear	Binaural hearing loss	1
Disorder of muscle/ tendon/other soft tissue	Upper limbs—wrist	Ongoing wrist soft tissue symptomatology	1
	Lower limbs—foot/toe	Foot crushed	1
Mental disorder	Psychological system	Psychological impairment from trauma (major depression or psychosis)	1
	Psychological system	Adjustment disorder with anxiety/depression	1
Nerve/spinal cord injury	Trunk—back (upper/lower)	Prolapsed intervertebral disc in lumbosacral spine with referred pain, treated surgically by discectomy or fusion	1
Other disease	Elbow	Medial epicondylitis and osteoarthritis	1
Sprain/strain	Trunk—back (upper/lower)	Lower back pain	1
	Neck	Neck strain	1
Traumatic amputation	Upper limbs—hand/finger/thumb	Loss of distal joint to index finger	1
Metalliferous surface			
Disorder of muscle/ tendon/other soft tissue	Upper limbs—forearm	Forearm injured in rock fall	1
Metalliferous underground			
Disorder of muscle/ tendon/other soft tissue	Upper limbs—hand/finger/thumb	Finger crushed	1
Quarries			
Deafness	Head—ear	Binaural hearing loss	3
Disorder of muscle/ tendon/other soft tissue	Lower limbs—knee	Infection from laceration to knee	1
	Upper limbs—shoulder	Shoulder injury	1
Total			**57**

1.3 Lost time injuries and disabling injuries

Figures 1.3–1.5 include statistics for the lost time injury frequency rate (LTIFR), severity rate and duration rate over a 10-year period from 2001–11, shown as statistical process control charts to emphasise changes in trends over time.

Figures 1.6 and 1.7 show the trends in lost time injury (LTI) and disabling injury (DI) rates in the years 2001–11.

Figure 1.8 illustrates how the number of LTIs and DIs in coal mines have remained reasonably constant since 2001 (with the exception of peaks in disabling injuries in 2005–06, 2006–07 and 2010–11), even though the number of employees has risen steadily. An increase in the number of injuries may have been expected, particularly given the increasing number of inexperienced employees entering the mining industry.

Interestingly, Figure 1.9 shows that at metalliferous mines and quarries the number of LTIs and DIs has steadily decreased over the 2001–11 period.

Figure 1.3: Lost time injury frequency rate per month (all sectors), 2001–11

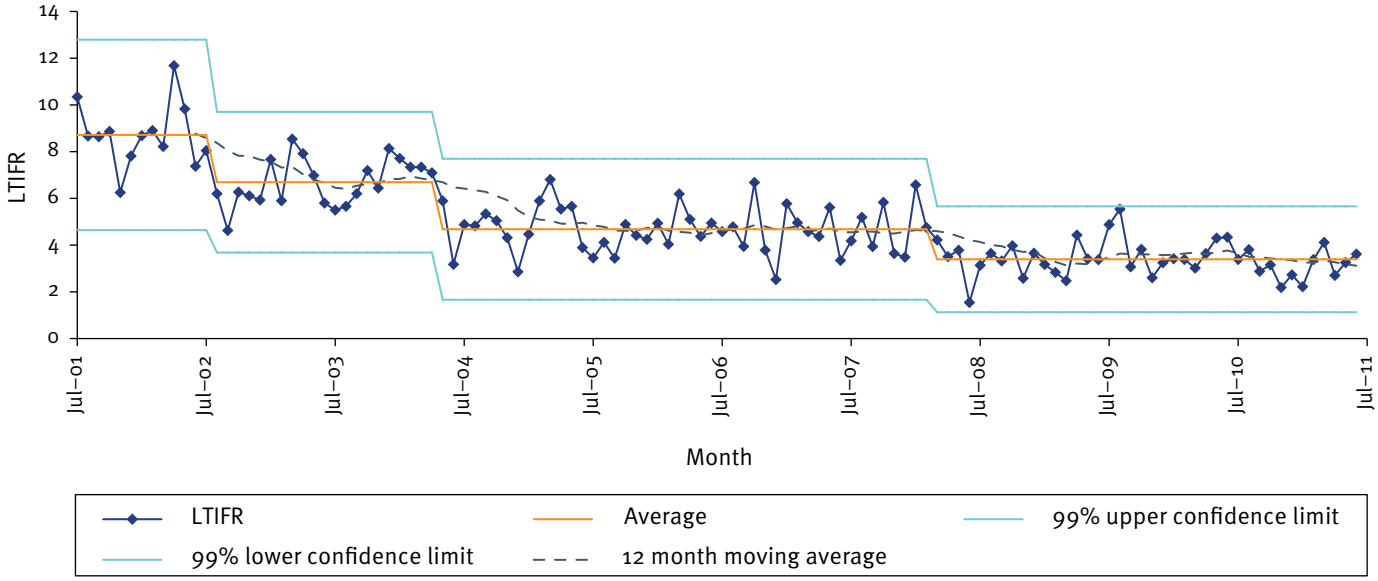


Figure 1.4: Severity rate per month (all sectors), 2001–11

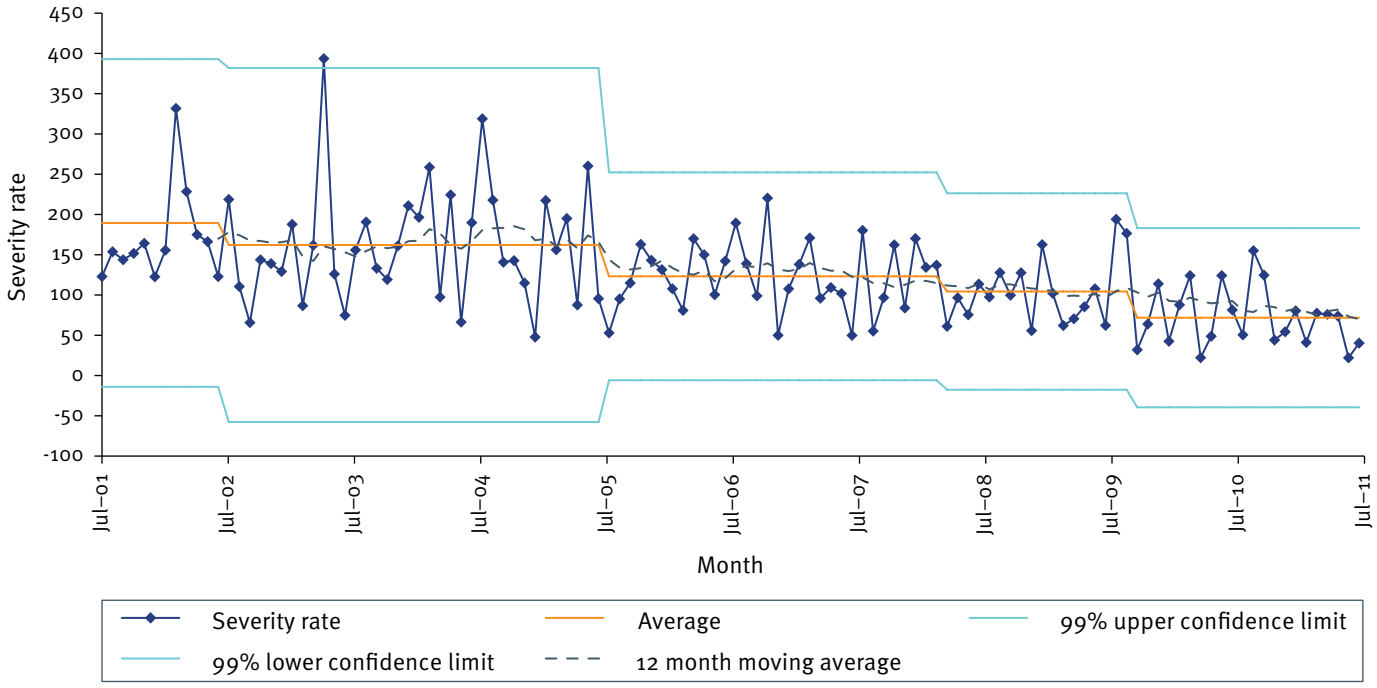


Figure 1.5: Duration rate per month (all sectors), 2001–11

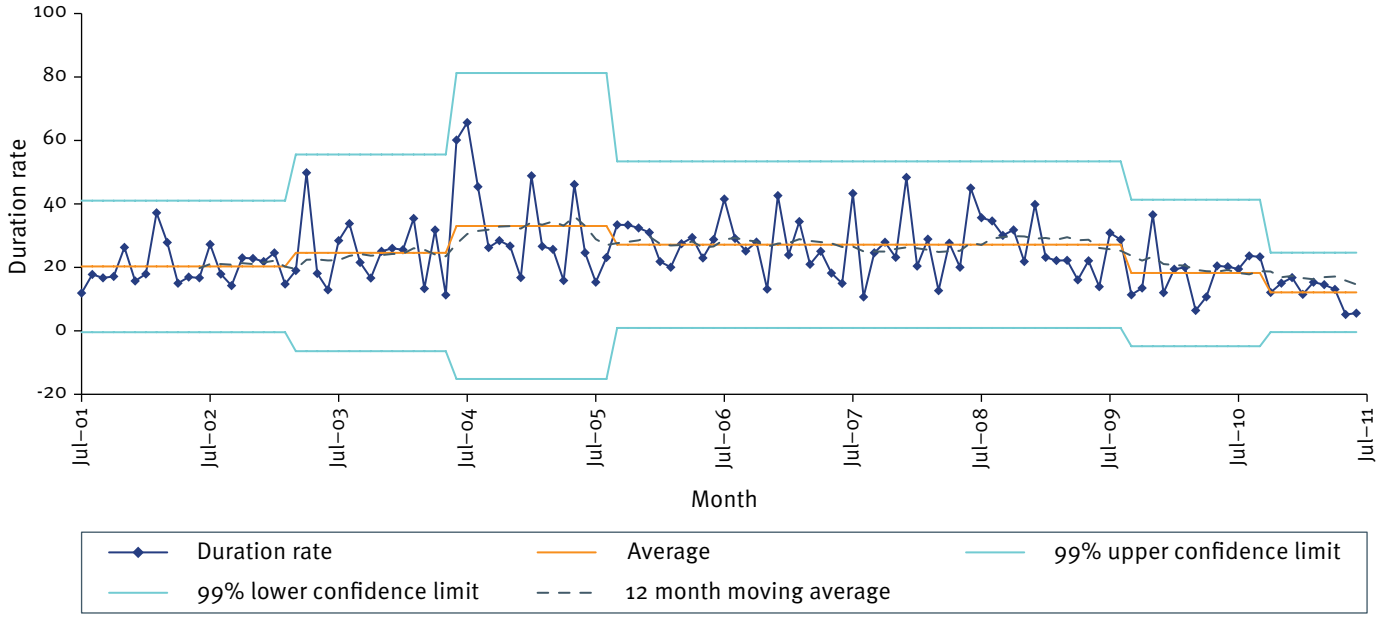


Figure 1.6: Lost time and disabling injury severity rate versus employment numbers (all sectors), 2001–11

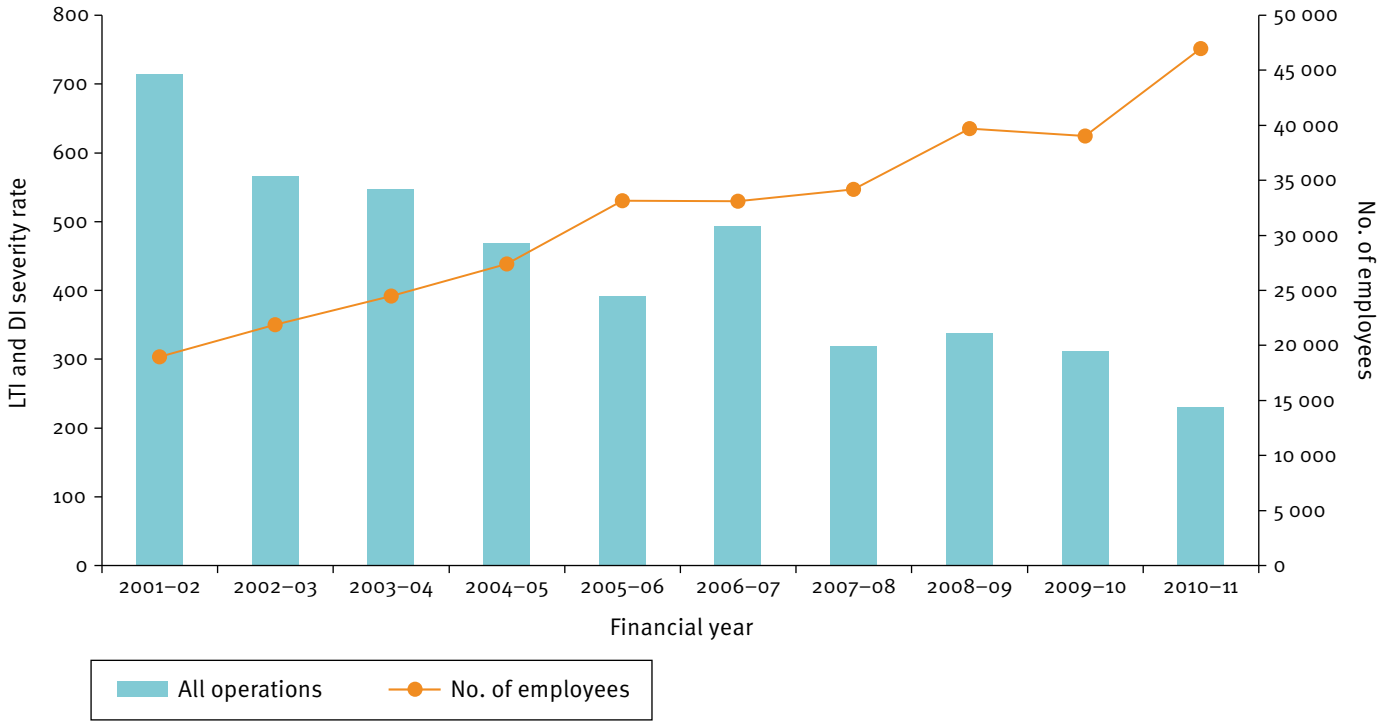


Figure 1.7: Lost time and disabling injury duration rate versus employment numbers (all sectors), 2001–11

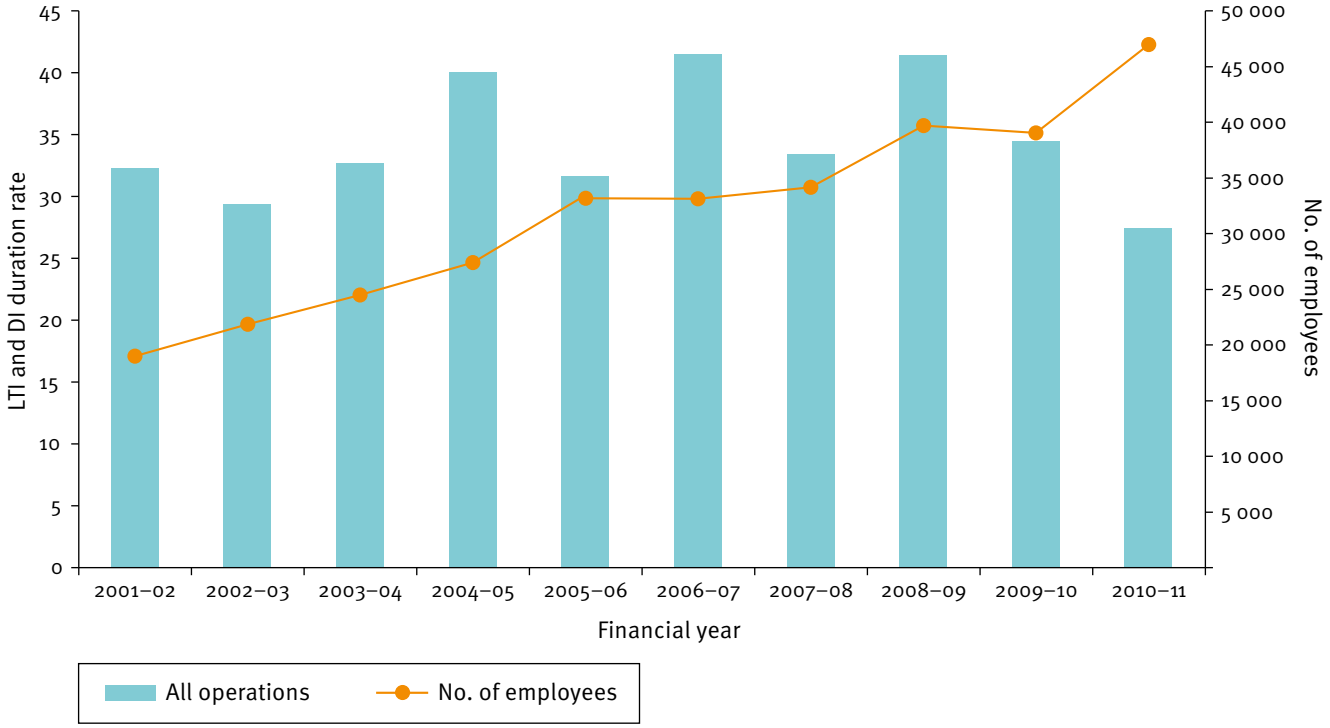


Figure 1.8: Lost time and disabling injuries versus employment numbers for coal mines, 2001–11

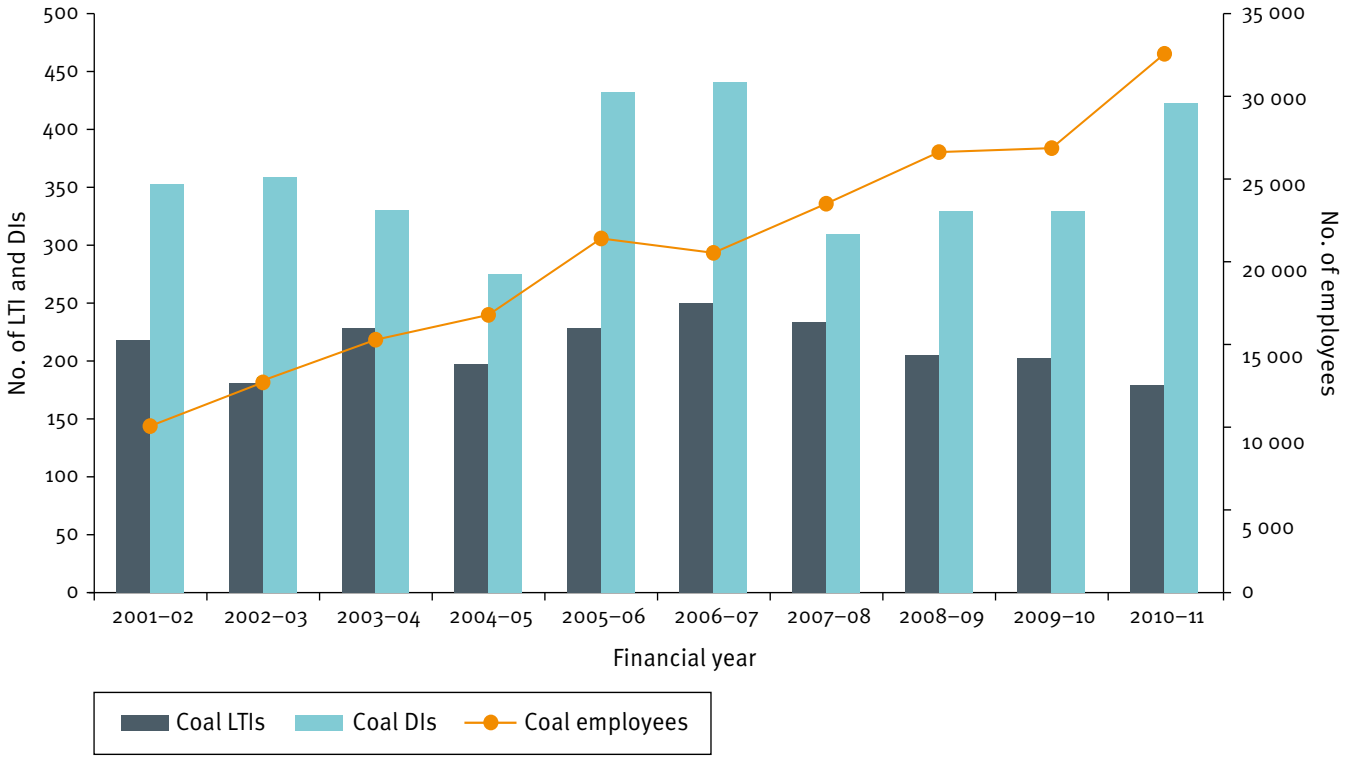
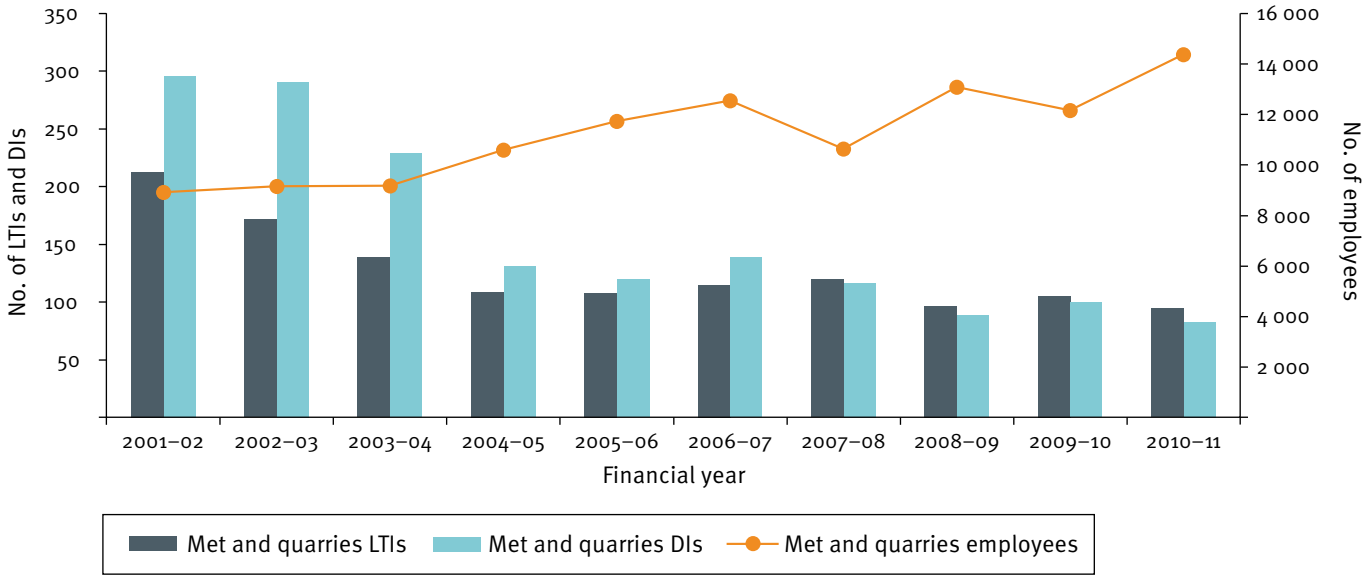


Figure 1.9: Lost time and disabling injuries versus employment numbers for metalliferous mines and quarries, 2001–11



1.4 Significant incidents

A significant incident is one in which a worker or workers either suffered, or could have suffered, a serious bodily injury. A 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 following incidents 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 numerous fire-related incidents. Most were associated with vehicle engine bays and brakes. Often these involved oil (engine, transmission or hydraulic) spraying onto exhausts, engines, and so on. There were also a number of vehicle incidents. These incidents were 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 numerous incidents of heavy vehicle rollovers.

Significant incidents reported at coal mines this year include:

- A scraper was conducting a cut on the topsoil block. During the loading process, the scraper drove off the edge of the stockpile and rolled onto its roof.
- There were numerous rock falls at open-cut mines. One such incident occurred when a rock fell out of a Cat 789 while it was tipping a load of overburden alongside a haul road. A dozer was stationed close to the truck and the rock bounced onto the left-hand rail of the dozer and smashed into the side glass of the cabin. The rock was approximately 50 cm in diameter and could have potentially caused a serious injury. This incident prompted an immediate review of clearances.
- After riggers had secured the load, an overhead crane operator began to operate the crane in order to remove the hoist gear case lid. The overhead crane made contact with an access walkway at the rear of the dragline house. The walkway fell to the ground, ricocheted and collided with an employee's left calf.
- While a dragline dozer operator was engaged in the task of ripping at the toe of the highwall, he noticed some signs of instability. A dragline was used to scale the wall. The dozer operator was observing the wall prior to resuming the task when a section of the wall fell out, narrowly missing the dozer.
- While replacing the cutting edges on a scraper, a fitter hit the cutting edge with a steel hammer sending a small shard of metal as a projectile. The metal fragment penetrated the scraper operator's shirt and approximately 10 mm into his abdomen.
- A fitter, working on a highwall pump in the bucket shop, fell from a 1.8 m high work platform and struck his head on the pump structure. He was taken to the local hospital where he received medical attention and precautionary x-rays and was then kept in hospital for observation.
- A worker lit an oxy torch without wearing the correct gloves and, when adjusting the hand piece, the connection from the hose to the handle blew off resulting in burns to both hands.
- There were numerous falls from roofs.

Metalliferous mines and quarries

There were numerous vehicle accidents. These accidents were caused by speed, mechanical failure, not obeying road rules and losing control on recently watered ground.

Significant incidents reported at metalliferous mines this year include:

- While driving out of the screener area an employee tried to adjust the air conditioning without looking. He drove over a bump that forced his hand up into the vent. The employee's finger could have been caught in the metal fan.
- While driving a loader up a haul road, the vehicle hit a pot hole; the driver received a sprained back when the seat bottomed out.
- A timber sleeper decking on a bridge broke under the weight of a 20 tonne Franna crane.
- A 120 mm diameter poly pipe was lifted with a 5 tonne auxiliary hook; the hook block failed and dropped the load approximately 4 m to the ground.
- During the course of fitting a new tyre to an articulated dump truck, the tyre fitter became trapped between the tyre (that was being transported on forklift tines) and the wheel rim that was still on the truck.
- During a survey, a rock (0.5 m × 0.5 m) fell off a blast rill and landed 5 m away from a surveyor.
- Momentum rolled a prime mover onto its side while it was tipping the first trailer.
- An operator was attempting to clear a blockage in a silo cement chute and had partially removed an inspection plate when approximately 10 tonnes of product was unexpectedly released.
- A steel rod, that had been left against a hand rail, moved with the vibration of the rail and fell to the ground within 1 m of an operating Bobcat.
- While an employee was installing a vent on a feeder platform, part of the platform collapsed, causing the employee to fall approximately 1.5 m.
- The inflation of a grader tyre blew the split rim flange 6 m due to a locking ring not being fitted. The remote tyre inflation tool was projected 65 m.

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. The ramifications of these incidents are often costly, both in human and commercial terms. It is therefore important that these data are gathered 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 is also indicative of a mature industry that treats 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 circulated to mines by email. Also, graphical breakdowns and statistics on HPIs by each mining sector are available at www.mines.industry.qld.gov.au

By 2006–07, the number of HPIs had steadily increased as the number of employees in the industry increased. However, even with this growth, the number of reported incidents dropped over the 2007–09 period. In the most recent two years, 2009–11, there has been an increase in reporting of HPIs. It is believed the higher number reported is consistent with reporting prior to 2006–07 (see Figure 1.10). The industry is to be commended on the increased reporting of HPIs.

Table 1.2 states that the number of HPIs reported per 1000 workers has decreased slightly in 2010–11 compared with 2009–10. This table also shows the number of improvement actions per 1000 workers arising from investigations of HPIs.

Figure 1.11 outlines the number of HPIs per type of incident. The top five HPIs, according to the number of reported incidents in 2010–11, were:

- loss of control/unplanned movement
- fire
- electrical
- vehicle
- mobile plant.

Multiple safety alerts and bulletins have recently been issued in relation to these hazards. Further information on these and other HPIs is available from www.mines.industry.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 1.10: Employee numbers and HPIs (all sectors), 2001–11

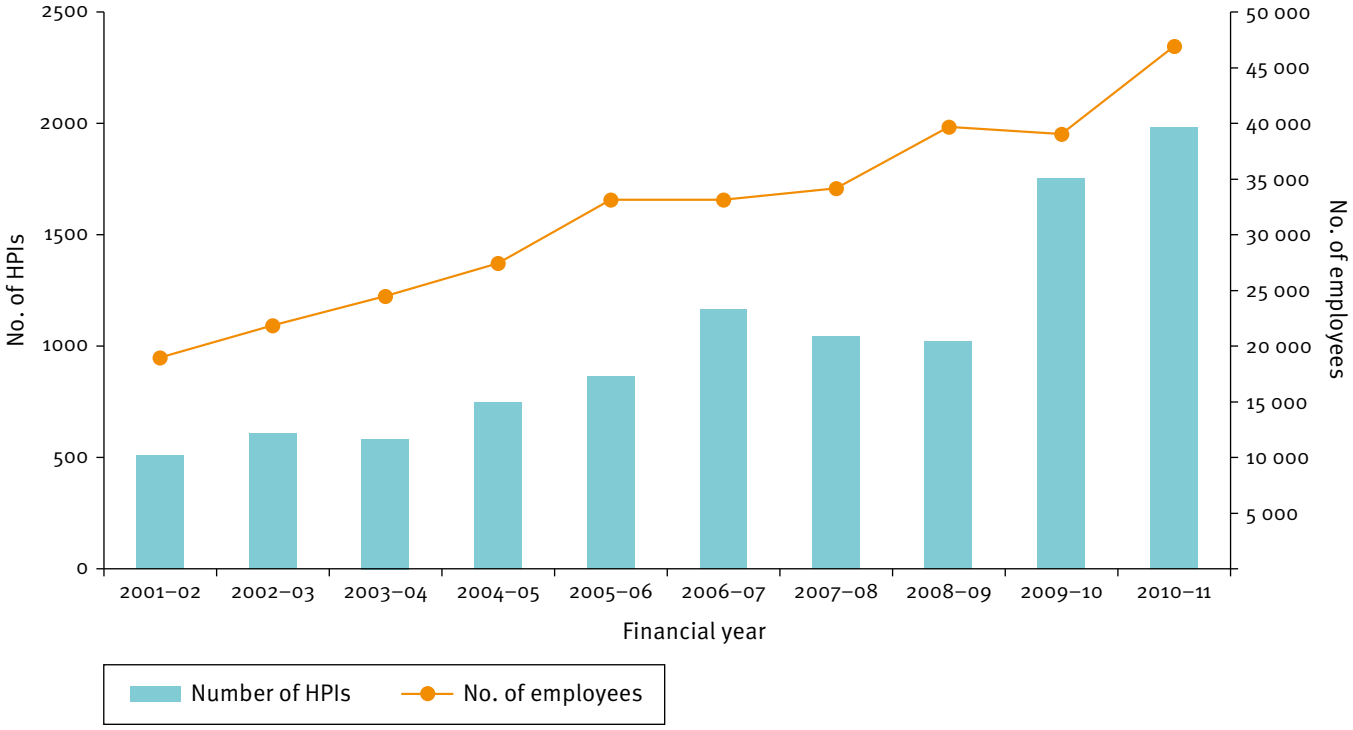


Table 1.2: Comparison of HPI reporting across sectors, 2008–11

	High-potential incidents per 1000 workers			Improvement actions resulting from HPI investigations per 1000 workers		
	2008–09	2009–10	2010–11	2008–09	2009–10	2010–11
Coal—surface	30	44	46	n/a	n/a	n/a
Coal—underground	16	70	56	n/a	n/a	n/a
Coal (per 1000 workers)	**27**	**49**	**48**	**96**	**95**	**73**
Metalliferous—surface	18	32	22	n/a	n/a	n/a
Metalliferous—underground	29	29	31	n/a	n/a	n/a
Metalliferous (per 1000 workers)	**23**	**31**	**26**	**114**	**251**	**88**
Quarries	**23**	**54**	**50**	**151**	**278**	**94**
Total = combined industries (per 1000 workers)	**26**	**44**	**42**	**103**	**132**	**78**

Figure 1.11: High-potential incidents in the Queensland mining industry, 2008–11

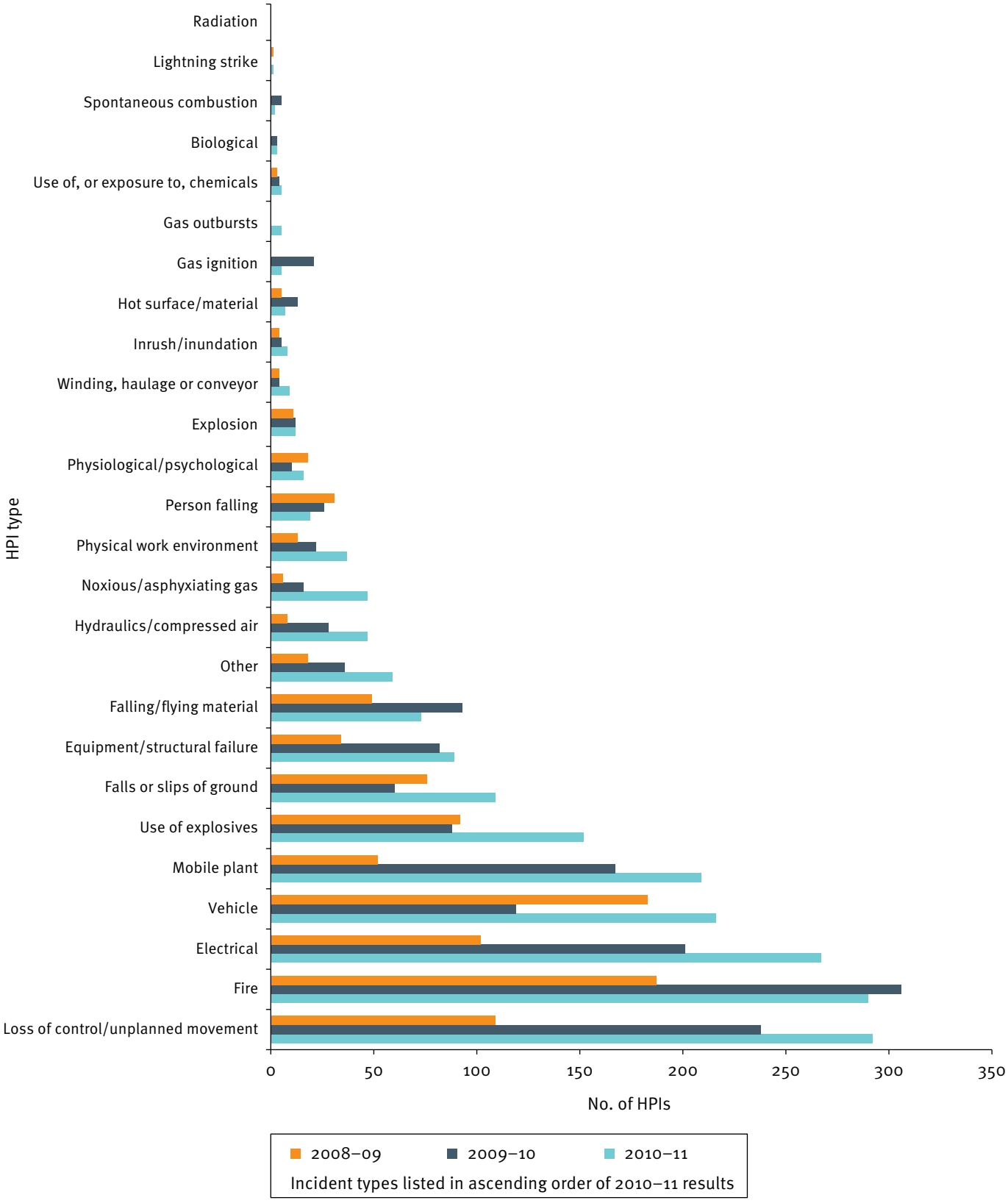


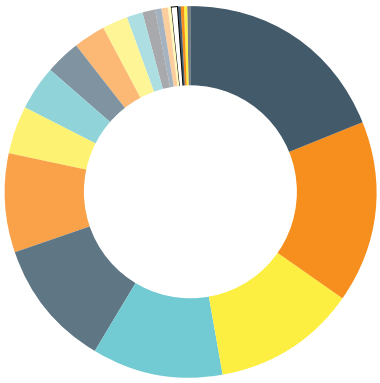
Table 1.3: Safety alerts and bulletins—high-potential incidents, 2010–11

Loss of control/unplanned movement	
Safety Alert No. 270	Managing underground coal mine contractors
Safety Alert No. 266	Managing hot-seat changeovers
Safety Alert No. 246	Driving while fatigued
Safety Bulletin No. 99	Uncontrolled movement on mine roads, including skidding, sliding, and light or heavy vehicle roll-over
Noxious/asphyxiating gas	
Safety Alert No. 269	Open-cut blast fume
Explosion	
Safety Alert No. 268	Unauthorised use of auxiliary fan
Hydraulics/compressed air	
Safety Alert No. 267	Incorrect use of Victaulic flexible coupling SC 77
Office of the Commissioner for Mine Safety and Health No. 1	Earthmover tyre and rim safety
Safety Alert No. 248	Facial impact injury from fuel tank cap releasing under pressure
Use of explosives	
Safety Alert No. 265	Blast-exclusion zones
Electrical	
Safety Alert No. 253	Electric shock from welding equipment
Safety Alert No. 264	Hazard of backfeed on some UPS units
Mobile plant	
Safety Alert No. 263	Non-slewing articulated mobile cranes tipping
Safety Alert No. 260	Failure of explosion protection on underground diesel engine systems
Safety Alert No. 258	Rail safety at coal mines
Safety Alert No. 249	Injury while working from a loader bucket
Safety Alert No. 245	Serious crush injury from Jumbo development drill boom
Safety Bulletin No. 109	Preventing excavators from rolling over
Safety Bulletin No. 100	Retrofit advice for some Haulotte mobile elevating work platforms
Falling or flying material	
Safety Alert No. 259	Injury from a hardened steel sledgehammer
Fire	
Safety Alert No. 255	Fire on an underground loader
Safety Bulletin No. 106	Recall of faulty Bulbeck 4.5 and 9 kg fire extinguishers
Vehicle	
Safety Alert No. 251	Safe operation of light vehicles
Safety Alert No. 247	Trucks tipping over the edge
Safety Bulletin No. 101	Brake system maintenance—rubber tyred vehicles
Other	
Safety Alert No. 243	Injury while working on Jaw Crusher Spring Assembly
Safety Bulletin No. 108	Exploration permits for coal: a reminder about the legislative requirements
Spontaneous combustion	
Safety Bulletin No. 107	Construction of seals
Inrush/inundation	
Safety Bulletin No. 105	Safety and health management system—water management plans
Physical work environment	
Safety Bulletin No. 104	Resuming operations after severe weather
Safety Bulletin No. 102	Severe weather preparedness
Equipment/structural failure	
Safety Bulletin No. 103	Integrity testing of earthmover rims

High-potential incidents—surface coal mines

The number of surface coal HPIs reported increased from 988 in 2009–10 to 1228 in 2010–11. Although fire was once again the highest contributing HPI type for surface coal, the percentage has reduced significantly from 27.3% in 2009–10 to 19.2% in 2010–11.

Figure 1.12: High-potential incidents at surface coal mines, 2010–11

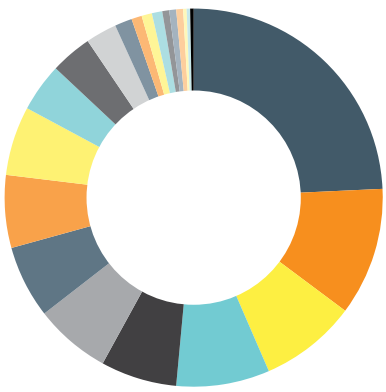


- Fire 19.2%
- Loss of control/unplanned movement 15.8%
- Vehicle 12.4%
- Electrical 11.5%
- Mobile plant 11.2%
- Use of explosives 8.4%
- Equipment/structural failure 4.2%
- Falls or slips of ground 4.1%
- Noxious/asphyxiating gas 3.0%
- Falling/flying material 2.7%
- Hydraulics/compressed air 2.3%
- Other 1.5%
- Physiological/psychological 0.9%
- Explosion 0.6%
- Physical work environment 0.6%
- Persons falling 0.4%
- Gas ignition 0.3%
- Hot surface/material 0.3%
- Winding, haulage or conveyor(s) 0.2%
- Inrush/inundation 0.2%
- Biological 0.1%
- Gas outbursts 0.1%
- Spontaneous combustion 0.1%
- Use of, or exposure to, chemicals 0.1%

High-potential incidents—underground coal mines

The number of underground coal HPIs reported decreased from 356 in 2009–10 to 338 in 2010–11. Electrical incidents decreased (36.6% to 24.3%) in 2010–11 but remained the most common underground coal HPI. Decreases in loss of control/unplanned movement (14.2% to 8.0%) and equipment/structural failure (11.9% to 6.2%) were marginal, but both types of incidents remained commonly reported. Mobile plant increased (6.7% to 10.9%) and moved from sixth to the second highest reported incident. The third highest reported incident, use of explosives (8.3%), went unreported in 2009–10.

Figure 1.13: High-potential incidents at underground coal mines, 2010–11

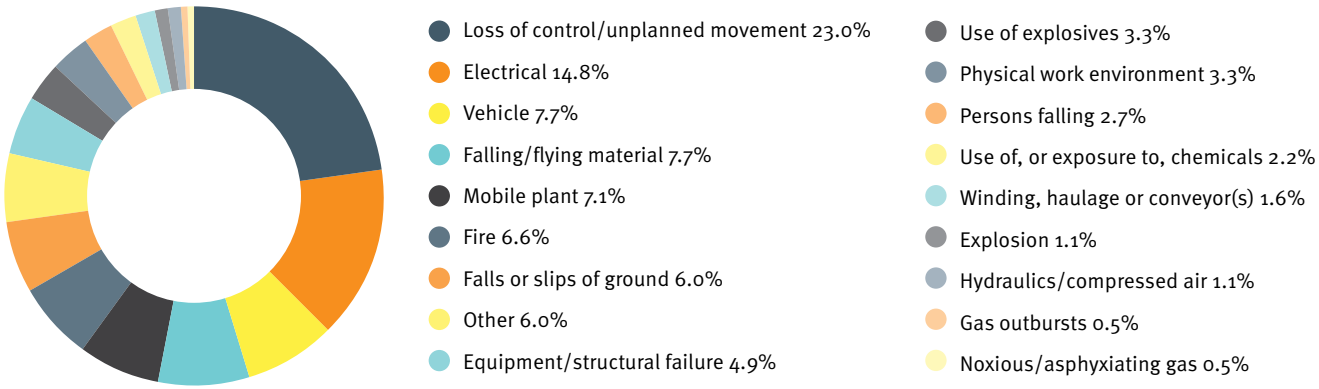


- Electrical 24.3%
- Mobile plant 10.9%
- Use of explosives 8.3%
- Loss of control/unplanned movement 8.0%
- Falls or slips of ground 6.5%
- Physical work environment 6.5%
- Equipment/structural failure 6.2%
- Vehicle 6.2%
- Other 5.9%
- Fire 4.1%
- Hydraulics/compressed air 3.6%
- Falling/flying material 2.7%
- Noxious/asphyxiating gas 1.5%
- Gas outbursts 0.9%
- Hot surface/material 0.9%
- Inrush/inundation 0.9%
- Persons falling 0.6%
- Winding, haulage or conveyor(s) 0.6%
- Physiological/psychological 0.6%
- Biological 0.3%
- Gas ignition 0.3%
- Spontaneous combustion 0.3%

High-potential incidents—surface metalliferous mines

The number of surface metalliferous HPIs reported decreased from 214 in 2009–10 to 183 in 2010–11. Last year, loss of control/unplanned movement and falling/flying material shared the highest percentage of surface metalliferous incidents reported at 18%. While loss of control/unplanned movement incidents increased to 23% in 2010–11 to remain the most common, falling/flying material dropped sharply to 7.7% to be the fourth highest reported incident. Electrical incidents rose marginally (9.8% to 14.8%) to become the second highest reported.

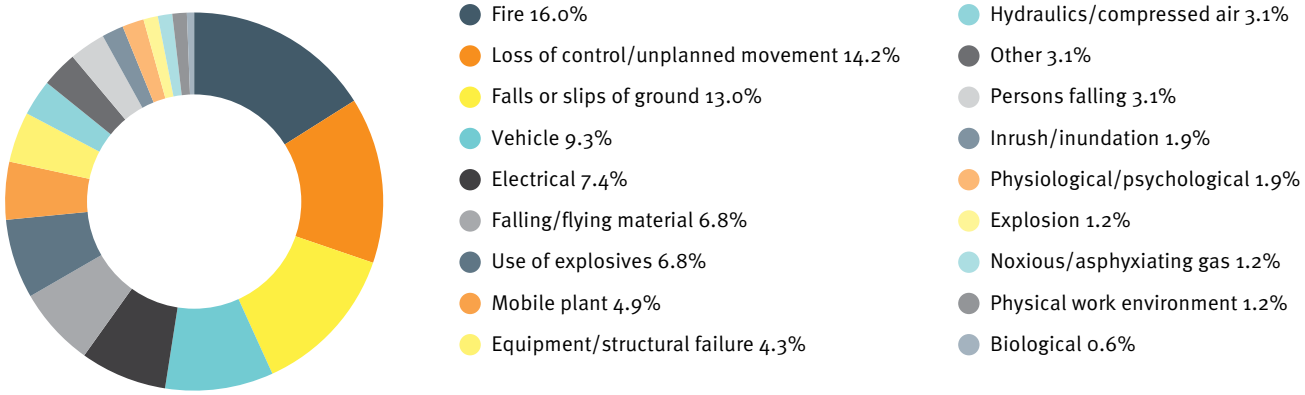
Figure 1.14: High-potential incidents at surface metalliferous mines, 2010–11



High-potential incidents—underground metalliferous mines

The number of underground metalliferous HPIs reported increased from 121 in 2009–10 to 162 in 2010–11. Although fire incidents decreased in percentage during 2010–11 (21.2% to 16.0%), they remained the most commonly reported. While loss of control/unplanned movement and falls or slips of ground again contributed to a large portion of incidents reported, there were no other significant changes in 2010–11.

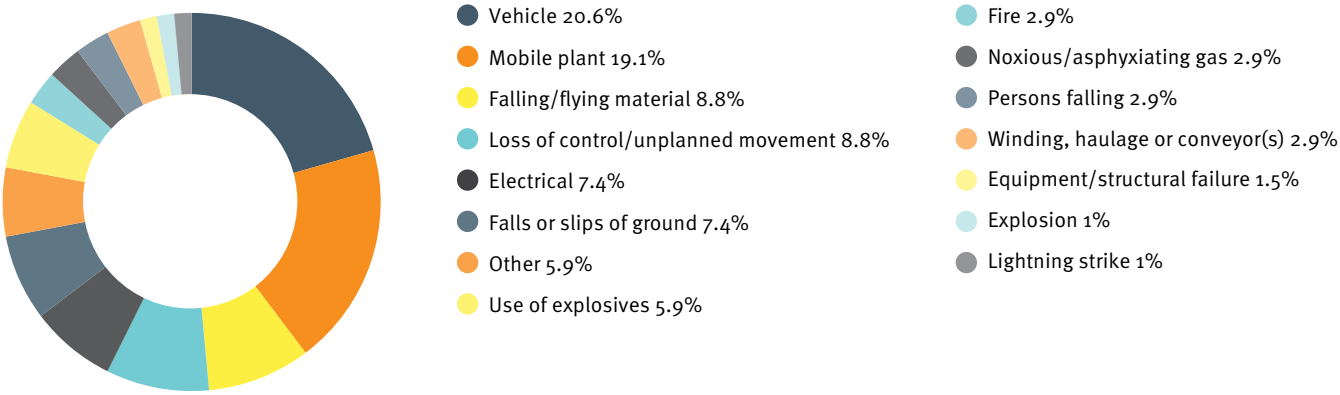
Figure 1.15: High-potential incidents at underground metalliferous mines, 2010–11



High-potential incidents—quarries

The number of quarrying HPIs reported decreased from 72 in 2009–10 to 68 in 2010–11. The percentage of vehicle incidents rose sharply (6.4% to 20.6%) to move from the fourth most reported to the highest reported quarrying incident in 2010–11. Conversely, electrical incidents dropped significantly (19.2% to 7.4%) and moved from the second to fifth highest reported.

Figure 1.16: High-potential incidents at quarries, 2010–11



1.6 Queensland Level 1 Mine Emergency Exercise 2010

The Executive Summary from the 2010 Level 1 Mine Emergency Exercise *report is outlined below. The full report is available at www.mines.industry.qld.gov.au*

The Warden's Inquiry into the coal mine explosion at the Moura No. 2 Underground Mine on 7 August 1994 recommended that every mine test its emergency systems at least annually.

Level 1 Mine Emergency Exercises are conducted in accordance with the requirements of Recognised Standard 8 Conduct of mine emergency exercises under the *Coal Mining Safety and Health Act 1999*. This standard states that it is the responsibility of the Chief Inspector of Coal Mines to ensure that a State Emergency Exercise Executive Management Committee is convened each year to design, organise, implement and audit the exercise.

This year's exercise was held on Tuesday 19 October 2010, between midnight and 5.30 am, at Carborough Downs coal mine, an underground coal mine located 30 km south of Moranbah, or 180 km west of Mackay, in Central Queensland. Severe storms are frequently experienced in this region.

Objectives of the exercise

Level 1 Exercises are set out to:

1. safely test the facilities and strategies in place at a mine to manage emergency events in all circumstances
2. test the competency of mine workers in using those facilities and implementing the strategies
3. enhance the confidence and ability of mine workers to respond in an emergency
4. identify opportunities for improvement
5. share the learning outcomes with industry
6. test the mine's emergency response system
7. test the ability of external services to administer assistance
8. provide a focal point for emergency preparedness in the state.

Based on the learnings from previous exercises and the individual characteristics of Carborough Downs coal mine, the 2010 exercise also sought to:

1. observe the donning and changeover of self-rescuers
2. observe the preparation for evacuation following a fan failure
3. observe evacuation from the mine through the belt drift
4. test dealing with an injured person
5. test the fire-fighting response
6. evaluate the effect of the gate system on emergency responders, including mines rescue teams
7. observe the use of the duty cards
8. observe the Incident Control Team's decision-making and use of resources
9. monitor the effectiveness of people-tracking systems
10. monitor fatigue management
11. examine the response to severe weather conditions.

Exercise scenario

The scenario involved a runaway vehicle underground causing a fire and injuring the operator. A severe storm caused the main ventilation fans to stop, and a mine official inspecting the mine during the emergency was reported missing.

The exercise aimed to test the systems and features at the Carborough Downs coal mine in an emergency and to verify the effect of recommendations of the previous year's emergency exercises, including:

1. mine response to the scenario including testing self-escape/aided escape and in-seam response as required
2. mobilisation of Queensland Mines Rescue Service(QMRS)
3. use of external services, including Mines Inspectorate, Industry Safety and Health Representative(s), Simtars, Police and Ambulance, to the extent required by the exercise scenario.

Evacuating mine workers was expected to:

1. shut the mine down safely before leaving their workplace
2. don their self-rescuers when they found smoke during the mine evacuation
3. look for the source of the smoke and fight the fire if they located it
4. treat the casualty if found and search for a missing person, and
5. find an alternative route to exit from the mine.

Performance effectiveness

The exercise report considered four aspects of the simulated emergency:

1. Activation
2. Response
3. Evacuation
4. Incident Management and the Incident Control Team (ICT).

Performance was evaluated against the relevant legislation, the Carborough Downs Emergency Response Principal Hazard Management Plan and industry best practice.

Best practice response to normal production stopping activities

- Don't leave hazards for others.
- Mine workers should leave their workplace in a condition that will allow safe re-entry, and minimise the effect of hazardous situations during their absence. Appropriate controls include supporting exposed strata, minimising the effect of any gas emissions, isolating mine services and placing machinery in a safe location.
- Mine workers should communicate the presence of hazards and the state of services to others needing to re-enter the mine.

Best practice response — activation and notification

- When in possession of information that can affect someone's safety, you must give it to them (requirement of the Act).
- The efficient gathering, analysis and dissemination of information can save lives. Early warning and rapid response systems are essential components of an efficient emergency response system.

Best practice response — fight that fire, if it is safe to do so!

- The discovery of fire requires mine workers to take immediate action in accordance with pre-defined strategies. The priority is to evacuate people to a place of safety, as they could be burnt or poisoned by fire products. A concurrent priority is to evaluate the situation and extinguish the fire if it is safe to do so.
- Putting out fires mitigates potential harm to others and reduces risk of an explosion. All people not involved in fire-fighting activities should be evacuated from the mine and accounted for.

Best practice response — evacuation via escapeways and use of self-rescuers

- When evacuating from an underground mine, mine workers should consider the circumstances and choose the safest escape route.
- Evacuation via a fresh-air escapeway will reduce risk of being overcome by fire products. Self-contained self-rescuers should be worn if there is a possibility of having to travel in contaminated escapeways.
- All else being equal, mine workers should travel via the primary escapeway in mechanised transport such as the mines 'drift runner' vehicles. This minimises travel time and conserves the oxygen available in their self-contained self-rescuer units. At some stage it may become unsafe to travel in a vehicle. An alternative fresh air escapeway should then be chosen to continue the evacuation.

Best practice response — duty cards

- Duty cards are an effective way to delegate and maintain control of activities in an emergency. They should be distributed as appropriate to the circumstances.
- Use duty cards to allocate critical tasks to available people.
- Duty cards remove the need for on-the-spot decision making and reduce the requirement for experience and knowledge.
- Duty cards allow people to achieve the objectives via appropriate prompts and stated performance criteria. In the absence of comprehensive training, instructions and supervision should be provided when issuing duty cards.

Best practice response — incident management and implementation of predefined strategies

- Obligations do not cease during an emergency, and so there is a need to provide for effective incident management. An Incident Control Team (ICT) is able to provide for effective incident management, and it should be formed when there is an emergency, or when there is a potential for a situation to escalate.
- The purpose of the ICT is to provide for adequate planning, organisation, leadership, supervision and control of coal-mining operations during an emergency. Its functions include:
  - The identification and implementation of strategies that reduce risk to persons affected by the emergency.
  - The implementation and maintenance of a management structure that helps ensure the safety and health of persons during an emergency.
- Provision of regular monitoring and assessment of the working environment, work procedures, equipment and installations at the mine during an emergency
- The ICT must:
  - Proceed with due diligence. This includes using and reviewing, during the emergency, pre-developed procedures, for example Trigger Action Response Plans (TARPs) and Standard Operating Procedures (SOPs).
  - Respond to changing circumstances, anticipate the future, and make necessary adjustments.
  - Manage by objectives, establish priorities, and track the progress of action plans.
  - Communicate effectively with all stakeholders, including external service providers.
  - Recognise that time lost mobilising resources could jeopardise efficient rescue or recovery operations. It is better to stand down resources than to discover that they are not there when you need them.

Recommendations to industry

The assessors have made 18 recommendations based on the exercise. They relate to training, allocation of tasks in the early stages of an emergency, fatigue management, and risk assessment.

1. That communications room operators learn to delegate their many functions to available people once an emergency response is activated.
2. That critical functions that can best be carried out in the communications room be identified, and alternative locations be designated for other activities.
3. That making outgoing calls be delegated to one of the first available people, and done away from the communications room.
4. That a single set of duty cards be readily available and distributed as soon as an emergency procedure is activated.
5. That mines investigate the features that are available on the DAC Communications System, including provision to override automatic calls in an emergency or once they have been acknowledged
6. That the Queensland Mines Rescue Service examine how it will respond when a mine indicates that 'there may be a problem'.
7. That the amount of effort required to release a CSE type of self-contained self-rescuer (SCSR) be included in refresher training and inductions.
8. That evacuation training include a preference for using a vehicle wherever this is possible.
9. That, where evacuation is through a portal away from the main entrance to the mine, systems be in place to:
   - record details of those who evacuate successfully
   - control entry to the mine
   - transport evacuated mine workers to a suitable location for debriefing and other activities.
10. That a review of a mine's emergency management risks include the need for low expansion foam at high fire-risk points underground and for the training of mine workers in fire-fighting technique.
11. That a review of a mine's emergency management risks include training in first aid and the location of emergency equipment.
12. That a relief plan be in place so that a blend of first and reserve members is available for the Incident Control Team.
13. That the Incident Control Team's objectives and priorities be clearly stated and posted so that they remain the focus of team activities, adjusted as they are achieved or as the situation changes.
14. That once an Incident Control Team is established all activities at the mine be brought under its control.
15. That mines examine the recording systems used for identifying who is at the mine and the underlying reasons for the systems. Where multiple purposes can be achieved in a single system, a single system should be preferred.
16. That mines review whether there are barriers to emergency response in their access system and identify ways of eliminating these without using people who could be used more effectively elsewhere.
17. That mines keep an up-to-date simulation of their ventilation system so that it can be used when circumstances change. A person familiar with the simulation must be available to the Incident Control Team.
18. That the system for minute taking at Incident Control Team meetings be similar to the one used in operational meetings at the mine so that a new system does not have to be learned during an emergency.

1.7 Diesel Particulate Matter Committee

The Diesel Particulate Matter (DPM) Committee was formed to oversee health and safety issues relating to the 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 industry consultants and representatives from industry and the Mines Inspectorate.

The DPM Committee met three times in 2010–11. These meetings were held on 10 November 2010, 2 March 2011 and 3 June 2011.

The major activities included:

- continuing effort by the sub-committee to prepare and publish a guideline for the management of diesel particulate in Queensland underground coal mines—a useful basis for a code of practice on DPM
- examining the use, by mines, of the arbitrarily set personal exposure standard of 0.1 mg of diesel particulate per cubic metre of air flow as a benchmark. The results of exposure monitoring show that most mines, at most times, do not exceed this figure; any mines that have difficulty in reaching this exposure level are being dealt with individually.
  - Longwall moves and development panels are most likely to exceed the limit.
  - Control measures such as exhaust filters and ventilation alterations are being used at times of high diesel vehicle usage; for example, longwall moves.
  - Some mines are striving to reduce exposure below 0.1 mg by using exhaust filters at all times and applying the as low as reasonably achievable (ALARA) principle to diesel particulate exposure.

Several industry organisations currently sponsor a research and test project on lowering raw DPM production from the CAT 3126 diesel engine system (DES) through tuning practices that do not impinge upon the DES certification requirements. Significant gains in DPM reduction are being cost-effectively achieved and other engine packages are being considered for inclusion in this project.

The 2010 series of inspectorate audits on implementation of the DPM systems were completed and efforts will be focused on checking the health of the systems during routine mine visits. In the future, the importance of ventilation as a control measure for DPM exposure will assume added significance. Other options for significant reduction of point of source emissions from existing engine packages have been fully explored.

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 Division. The committee met three times in 2010–2011. These meetings were held in Brisbane on 9 September 2010 and 9 February 2011, and in Townsville on 18 May 2011.

The major activities included:

- Toolbox talks were developed to improve the communication of mining health information. The training materials for open-cut coal and underground coal, on whole-body vibration (WBV), were completed and circulated to safety and health personnel at most major coal mines.
- One committee meeting was dedicated to communicating health information:
  - understanding the principles of plain English communication of occupational health information
  - developing templates and strategies for communicating mining health hazards in the future.
- One committee meeting was dedicated to UV solar radiation with presentations on research and good practice. The key topics and presenters included:
  - Professor Adèle Green, Deputy Director, Queensland Institute of Medical Research (QIMR) and expert in skin cancer and melanoma, provided information on research into the role of sunscreen in melanoma prevention.
  - Reg Green, Cancer Council Queensland, presented a toolbox talk on adverse health effects due to solar UV exposure.
  - Gary Craig, Uvex, spoke on issues relating to UV, glare and safety glasses.
  - Brett Harrison, Energex, shared information on workplace-based sun protection activities.
- A subcommittee was formed to review *A guide to the development and implementation of a health management plan in the NSW mining and extractives industry*[2] in order to draft a similar, customised document for Queensland mining. As a result, templates addressing key health hazards were created.

[2] Published by Industry and Investment NSW for and on behalf of The State of NSW, 2009.

2. The Mines Inspectorate

2.1 Departmental initiatives

Whole-body vibration toolbox talks project

In conjunction with the HIAC, the senior principal ergonomist completed a project to raise awareness of effective management of WBV in mining. Based on input from both industry and unions, this pilot project provided a format for toolbox talks and fact sheets for workers on WBV that will be used as a model for further health hazard communication. A DVD containing all the information, including a guide for presenters delivering toolbox talks, was sent to coal mine site senior executives (SSEs) with the support of Anglo American Metallurgical Coal Pty Ltd. All of the presentations and fact sheets will also be made available on the HIAC website for sites to use and tailor to their specific equipment examples. A recent article in *The Mining Advocate* publication also raised awareness of the issue and the availability of information.

Polymeric chemicals

The Mines Inspectorate, through the senior principal hygienist, has been reviewing the use of polymeric chemicals in Queensland coal mines. Surveys were sent to all underground coal mines and responses were used to generate a report that provided feedback to industry. This report details information on the hazards, control measures and extent of use of these products. As a part of this ongoing review, personal exposure monitoring during the use of these products underground has commenced. This monitoring program will continue into 2012.

This report is available at www.mines.industry.qld.gov.au

DPM exposure in Queensland coal mines

The Mines Inspectorate, through the senior principal hygienist and an inspector of mines (mechanical), conducted a review of personal exposure in Queensland underground coal mines during 2010. Approximately 800 samples were reviewed, statistically analysed and compared with the current guideline limit. This information was presented to the DPM Committee.

Excessive exposures were discussed with respective mines where appropriate. A small number of mines had no issues and were provided with emailed feedback rather than official results. The remaining mines received visits from the senior principal hygienist and an inspector of mines to discuss their results.

Berlin questionnaire

Following a meeting of nominated medical advisers (NMAs)—the doctors who carry out the medicals for the Coal Mine Workers Health Scheme—it was recommended that testing for sleep disorders be included in the health scheme medical. This recommendation was endorsed by the Coal Mining Safety and Health Advisory Committee and, as a result, the medical included a sleep survey, known as the Berlin questionnaire.

The decision of the committee meeting held on 12 August 2010 was that the Berlin questionnaire would run for a trial period of six months. Meetings with industry and worker representatives were held, resulting in the development of three information sheets—one each for workers, employers and NMAs. The Berlin questionnaire was introduced on 1 January 2011 and concluded on 30 June 2011.

The accurate number of personnel with sleep apnoea will not be known until all the results have been analysed.

Queensland Mining Industry Health and Safety Conference

Safety and health personnel were well represented at the podium at the 2010 Simple Solutions to Complex Problems Queensland Mining Industry Health and Safety Conference held in Townsville.

The sessions presented by Mines and Energy, DEEDI, were:

- Simple solutions: communicating vibration information to workers in toolbox talks; presented by Trudy Tilbury, Senior Principal Ergonomist/Principal Human Factors Advisor
- The work ability index; co-presented by Gerard Tiernan, Manager, Health Surveillance, Safety and Health, and Trudy Tilbury, Senior Principal Ergonomist/Principal Human Factors Advisor
- Statewide audit of underground coal mine gas monitoring systems; co-presented by Darren Brady, Manager, Occupational Hygiene, Environment and Chemistry Centre (OHECC), Simtars, and Tim Watson, Inspector of Mines
- ISOLgate/TYREgate/COLLISIONgate—a suite of global risk management decision support portals; co-presented by Tilman Rasche, Senior Inspector of Mines and Dr Guldidar Kizil, Research Fellow, Risk Management, Minerals Industry Safety and Health Centre (MISHC), The University of Queensland
- Managing hazardous materials in Queensland mines; presented by Carolyn Topping, Health, Safety and Environmental Scientist, Simtars
- The Health Improvement and Awareness Committee; presented by Fritz Djukic, Senior Principal Hygienist
- Lots of training—how much learning; presented by John Sleigh, Inspector of Mines
- Simtars' new mobile gas laboratory for emergency response; presented by Darren Brady, Manager OHECC, Simtars
- Safety management system (SMS)—what makes an effective SMS?; presented by Gavin Taylor, Chief Inspector of Coal Mines

Quarrying Safety and Health Seminar, Brisbane

The Ninth Annual Quarrying Safety and Health Seminar was held on 8 June 2011 at the Victoria Park Function Centre. Presentations delivered at the seminar by safety and health officers were:

- Incident case studies; presented by Phil Goode, Regional Inspector of Mines

- National OH&S Harmonisation—How will I be affected?; presented by Rob O'Sullivan, Chief Inspector of Mines (Metalliferous and Quarries)

Quarrying Safety and Health Seminar, Townsville

The Sixth Annual Quarrying and Small Mines Safety and Health Seminar, *Striking a balance*, was held on 12 April 2011 at the Rydges Southbank Convention Centre, Townsville. Presentations delivered by safety and health officers were:

- Incidents/accidents Qld 2010; presented by Hermann Fasching, Acting Manager Safety and Health
- Avoiding the competency confession: 'I thought he knew, now I know he didn't'; presented by Trevor Brown, Acting District Inspector of Mines
- Update on Queensland legislation harmonisation—small mines opal and gemfields program; presented by Rob O'Sullivan, Chief Inspector of Mines (Metalliferous and Quarries)

Opal and gemstone mines initiative

Opal and gemstone miners have successfully completed stage 1 of the small mines initiative. Workshops were conducted by mines inspectors to assist opal and gemstone miners develop and implement a safety and health management system (SHMS) for their operations.

In conjunction with industry leaders, the Mines Inspectorate has successfully developed and refined resources and training material, including:

- SHMS Safety Resource booklet
- SHMS plan pro forma template
- a mine diary suitable for training opal miners to develop and implement a SHMS to suit the size and complexity of their operation.

A total of 700 miners attended 22 one-day workshops throughout regional Queensland. A further 18 workshops are planned for the next season in 2012.

Safety publications for small mines and quarries

In conjunction with the Institute of Quarrying Australia, the Mines Inspectorate has developed and published two safety publications: *Slope stability field book* and *Traffic management—a guide to your safety*. These publications, which target workers and supervisors, have been produced to assist quarries and small mines to develop and implement effective strategies to control known hazards. Following the success of the slope stability publication, a number of other publications are planned.

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 2010–2011, the Mines Inspectorate initiated and implemented amendments to the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*. The *Mines and Energy Legislation Amendment Act 2011* made the following amendments to the Acts:

- The Acts have been amended to recognise other means of engagement of an SSE, for example, SSEs not 'employed' in the normal use of the word in instances where they are contractors or are employed through an employment agency.
- Under the Acts, obligations are placed on designers, manufacturers, importers and suppliers of plant at a mine site, but there was no obligation on persons designing earthworks (e.g. tailings, dams). The obligation is now extended to persons designing earthworks.
- The legislation was amended to make clear that only one SHMS is to be developed for a mine. Where contractors are working at the mine and conducting similar work, all persons should work under the same SHMS.
- A mine record must now be kept for seven years and mine operators are to ensure that mine records relating to the previous six months are to be available at all reasonable times for inspection by workers. The purpose of the amendment is to create an obligation for sufficient mine record history to be made available for the SSE and mine workers to assist in maintaining an effective SHMS and to ensure the record is passed from one mine operator to the next if a new operator is appointed.
- There is now a power to obtain a court injunction for noncompliance with a statutory notice.
- The minimum age provision for operation of plant at a mine prohibits persons under 16 years of age from operating or maintaining plant and machinery at a mine.
- Provisions provide the Industrial Court the power to award costs in appropriate matters.

The following amendments apply only to the *Coal Mining Safety and Health Act 1999*:

- It is now a requirement for mine surveyors to be registered with a recognised professional body constituted under the *Surveyors Act 2003* or alternatively hold a competency recognised by the Coal Mining Safety and Health Advisory Committee.
- The underground mine manager now has the authority to appoint an appropriate person as ventilation officer for a coal mine.
- The underground mine manager may assume the responsibilities of the ventilation officer as long as he/she satisfies the conditions for competency.

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 29 September 2008 a fatality occurred on a coal exploration site (EPC987) when a water truck driver was crushed between a gate and the water diffuser outlet pipe on the rear of his truck. It is likely that the truck rolled backwards while the driver was closing the gate. The operator, Macmines Austasia, and the SSE, were prosecuted. The SSE, who pleaded guilty, received a $15 000 fine and was required to pay $577 in professional fees and $49 908 for the cost of investigations. The operator, who also pleaded guilty, received a $75 000 fine and was required to pay $5000 in professional fees and $70 000 for the cost of investigations.

On 8 November 2009 a serious accident occurred at Bundoora Colliery—a contract machine operator suffered fractures to both bones in his lower left leg when he was injured by a shuttle car. The shuttle car was driven by the ERZ Controller (Deputy) for the district, who was also a contract employee. The shuttle car driver was prosecuted and subsequently pleaded guilty. He returned his certificate of competency to the Board of Examiners and, on 13 May 2011, was fined $10 000.

Metalliferous mines and quarries

Nil

2.4 Coronial inquests into mining-related fatalities

A coronial inquest was held in Rockhampton into the road crash deaths of Graham Peter Brown on 24 October 2005 at Hedlow; Malcolm James Mackenzie on 24 October 2005 on the Rockhampton–Yeppoon Road; and Robert John Wilson on 1 February 2007 on the Dysart Middlemount Road, Dysart. Two of the three people killed were coal mine workers who had completed 12-hour shifts prior to their departure from their places of employment.

One of the contributory factors considered by the coroner was the possibility that fatigue played a part in the incidents.

The coroner delivered the findings of the coronial inquest on 23 February 2011. Twenty-four recommendations were made by the coroner, the majority of which were directed at the Department of Transport and Main Roads and the Queensland Police Service (QPS). The Mines Inspectorate was mentioned in nine of the recommendations, two of which were:

- negotiation of a memorandum of understanding between the QPS and the Mines Inspectorate—for the Mines Inspectorate to be notified of road crashes involving persons travelling to and from a mine to enable investigation at the mine
- the establishment of a fatigue management forum—co-sponsored by the Mines Inspectorate, QRC and CFMEU to target research at the industry and mine level.

Work has commenced on the implementation of the nine recommendations that were accepted in full by DEEDI. The Mines Inspectorate is working with the QPS, the Department of Transport and Main Roads and the Department of Justice and Attorney-General on the recommendations that involve a collaborative approach.

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 mine workers or their representatives to make confidential complaints about safety and health matters to the Mines Inspectorate.

During 2010–11, 107 complaints were received by the Mines Inspectorate, of which 71 were from mine workers or their representatives. Mine worker 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, 87 have been fully completed and closed out to date. The broad range of outcomes included:

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

2.6 Directives issued by the Mines Inspectorate

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

During 2010–11, the Mines Inspectorate issued 345 directives, a decrease of 546 from the unusually high number issued in 2009–10, when the coroner's recommendations saw multiple directives issued to all coal mines and coal exploration sites.

The directives issued in 2010–11 included:

- 185 in the central region
- 89 in the northern region
- 71 in the southern region.

Of these directives, 163 were issued under the *Coal Mining Safety and Health Act 1999* and 182 were issued under the *Mining and Quarrying Safety and Health Act 1999*. The types of directives issued were to:

- ensure coal mine worker competent
- ensure worker competent
- carry out test
- reduce risk
- suspend operations for unacceptable level of risk
- review SHMS and principal hazard management plans
- review SHMS
- suspend operations for ineffective SHMS
- isolate site
- provide independent engineering study.

Figure 2.1: Complaint type and number received across all sectors, 2010–11 (compared with 2009–10)

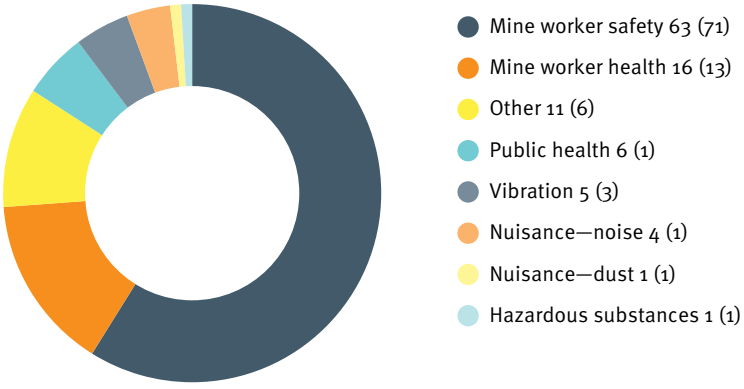


Table 2.1: Mines Inspectorate inspection activity, 2010–11

	2008–09	2009–10	**2010–11**
Inspections	1115	1197	**1321**
Inspections—unannounced	337	288	**161**
Inspections—weekend or backshift	27	18	**18**
Inspections—unannounced weekend or backshift	29	32	**12**
Audits—subject or system specific	41	135	**135**
Audits—compliance audits	24	108	**44**

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 as 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, 2006–11
- Table 3.2: Number of lost time injury days (days away from work only), 2006–11
- Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2006–11
- Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties because they cannot return to their normal job), 2006–11
- Table 3.5: Number of disabling injury days (days on alternative duties), 2006–11
- Table 3.6: Number of lost time injuries and disabling injuries, 2006–11
- Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2006–11
- Table 3.8: Number of permanent incapacities, 2006–11
- Table 3.9: Number of fatalities, 2006–11
- Table 3.10: Number of medical treatment injuries, 2006–11
- Table 3.11: Total recordable injuries, 2006–11
- Table 3.12: Number of reported high-potential incidents, 2006–11
- Table 3.13: Number of employees at 30 June, 2006–11
- Table 3.14: Total hours worked (millions), 2006–11

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.

There has been much criticism of using the number of LTIs as the main industry performance measure with respect to health and safety. The criticism centres on the fact that the number of LTIs can be manipulated by having injured or ill 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 (TRIs)—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 has only just commenced collecting MTI data from metalliferous mines and quarries and these statistics have been included in the report for the first time.

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 both the days lost from work and the days on alternative duties when assessing injury severity.

The total number of days on alternative duties for LTIs and for DIs is not reported in this document—this number has no real meaning and cannot be normalised and calculated as a rate.

Table 3.1: Number of lost time injuries, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	133	152	125	138	134
Coal—underground	117	81	80	64	45
Coal subtotal	**250**	**233**	**205**	**202**	**179**
Metalliferous—surface	52	54	54	47	41
Metalliferous—underground	39	40	26	30	25
Metalliferous subtotal	**91**	**94**	**80**	**77**	**66**
Quarries	23	25	16	28	28
All operations	**364**	**352**	**301**	**307**	**273**

Table 3.2: Number of lost time injury days (days away from work only), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	4 253	5 312	4 234	3 184	3 475
Coal—underground	2 517	1 887	2 105	2 010	737
Coal subtotal	**6 770**	**7 199**	**6 339**	**5 194**	**4 212**
Metalliferous—surface	1 201	454	918	1 110	721
Metalliferous—underground	1 151	960	1 135	639	599
Metalliferous subtotal	**2 352**	**1 414**	**2 053**	**1 749**	**1 320**
Quarries	332	322	328	462	874
All operations	**9 454**	**8 935**	**8 720**	**7 405**	**6 406**

Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	7 764	8 330	7 669	6 461	6 570
Coal—underground	5 263	3 021	5 925	3 884	1 207
Coal subtotal	**13 027**	**11 351**	**13 594**	**10 345**	**7 777**
Metalliferous—surface	1 974	909	1 596	1 785	942
Metalliferous—underground	1 833	1 831	1 819	1 560	1 047
Metalliferous subtotal	**3 807**	**2 740**	**3 415**	**3 345**	**1 989**
Quarries	412	429	378	635	1 261
All operations	**17 246**	**14 520**	**17 387**	**14 325**	**11 027**

Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties as they cannot return to their normal job), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	232	151	208	214	248
Coal—underground	209	158	121	115	175
Coal subtotal	**441**	**309**	**329**	**329**	**423**
Metalliferous—surface	53	38	31	28	33
Metalliferous—underground	78	75	57	70	49
Metalliferous subtotal	**131**	**113**	**88**	**98**	**82**
Quarries	7	3	0	1	0
All operations	**579**	**425**	**417**	**428**	**505**

Table 3.5: Number of disabling injury days (days on alternative duties), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	11 295	5 317	6 295	4 234	5 201
Coal—underground	7 389	3 735	3 028	2 828	3 418
Coal subtotal	**18 684**	**9 052**	**9 323**	**7 062**	**8 619**
Metalliferous—surface	781	668	828	1 264	863
Metalliferous—underground	2 348	1 601	2 195	2 610	831
Metalliferous subtotal	**3 129**	**2 269**	**3 023**	**3 874**	**1 694**
Quarries	35	100	0	41	0
All operations	**21 848**	**11 421**	**12 346**	**10 977**	**10 313**

Table 3.6: Number of lost time injuries and disabling injuries, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	365	303	333	352	382
Coal—underground	326	239	201	179	220
Coal subtotal	**691**	**542**	**534**	**531**	**602**
Metalliferous—surface	105	92	85	75	74
Metalliferous—underground	117	115	83	100	74
Metalliferous subtotal	**222**	**207**	**168**	**175**	**148**
Quarries	30	28	16	29	28
All operations	**943**	**777**	**718**	**735**	**778**

Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	19 059	13 647	13 964	10 695	11 771
Coal—underground	12 652	6 756	8 953	6 712	4 625
Coal subtotal	**31 711**	**20 403**	**22 917**	**17 407**	**16 396**
Metalliferous—surface	2 755	1 577	2 424	3 049	1 805
Metalliferous—underground	4 181	3 432	4 014	4 170	1 878
Metalliferous subtotal	**6 936**	**5 009**	**6 438**	**7 219**	**3 683**
Quarries	447	529	378	676	1 261
All operations	**39 094**	**25 941**	**29 733**	**25 302**	**21 340**

Table 3.8: Number of permanent incapacities, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	1	2	23	36	40
Coal—underground	2	3	8	5	10
Coal subtotal	**3**	**5**	**31**	**41**	**50**
Metalliferous—surface	2	1	0	3	1
Metalliferous—underground	0	0	3	2	1
Metalliferous subtotal	**2**	**1**	**3**	**5**	**2**
Quarries	2	1	5	1	5
All operations	**7**	**7**	**39**	**47**	**57**

Table 3.9: Number of fatalities, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	0	0	1	0	2
Coal—underground	1	0	0	0	0
Coal subtotal	**1**	**0**	**1**	**0**	**2**
Metalliferous—surface	0	0	0	0	0
Metalliferous—underground	1	1	1	0	1
Metalliferous subtotal	**1**	**1**	**1**	**0**	**1**
Quarries	1	0	1	1	0
Exploration	1	0	1	0	0
All operations	**4**	**1**	**4**	**1**	**3**

Table 3.10: Number of medical treatment injuries, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	577	618	446	264	368
Coal—underground	558	548	478	138	272
Coal subtotal	**1 135**	**1 166**	**924**	**402**	**640**
Metalliferous—surface	n/a	n/a	n/a	n/a	92
Metalliferous—underground	n/a	n/a	n/a	n/a	49
Metalliferous subtotal	**n/a**	**n/a**	**n/a**	**n/a**	**141**
Quarries	n/a	n/a	n/a	n/a	30
All operations	**1 135**	**1 166**	**924**	**402**	**811**

n/a = collection of data was not required at this time

Table 3.11: Total recordable injuries, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	942	921	779	616	750
Coal—underground	884	787	679	317	492
Coal subtotal	**1 826**	**1 708**	**1 458**	**933**	**1 242**
Metalliferous—surface	n/a	n/a	n/a	n/a	166
Metalliferous—underground	n/a	n/a	n/a	n/a	123
Metalliferous subtotal	**n/a**	**n/a**	**n/a**	**n/a**	**289**
Quarries	n/a	n/a	n/a	n/a	58
All operations	**1 826**	**1 708**	**1 458**	**933**	**1 589**

n/a = collection of data was not required at this time

Table 3.12: Number of reported high-potential incidents, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	639	613	641	988	1 228
Coal—underground	218	107	82	356	338
Coal subtotal	**857**	**720**	**723**	**1 344**	**1 566**
Metalliferous—surface	134	167	128	214	183
Metalliferous—underground	135	103	137	121	162
Metalliferous subtotal	**269**	**270**	**265**	**335**	**345**
Quarries	37	54	34	72	68
All operations	**1 163**	**1 044**	**1 022**	**1 751**	**1 979**

Table 3.13: Number of employees at 30 June, 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	16 456	18 989	21 582	22 339	26 346
Coal—underground	4 083	4 521	5 029	4 516	6 222
Coal subtotal	**20 539**	**23 510**	**26 611**	**26 855**	**32 568**
Metalliferous—surface	6 775	4 933	6 943	6 653	7 776
Metalliferous—underground	4 506	4 298	4 654	4 195	5 219
Metalliferous subtotal	**11 281**	**9 231**	**11 597**	**10 848**	**12 995**
Quarries	1 272	1 394	1 483	1 310	1 373
All operations	**33 092**	**34 135**	**39 691**	**39 013**	**46 936**

Table 3.14: Total hours worked (millions), 2006–11

	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	40.4	40.9	45.6	44.8	50.2
Coal—underground	9.0	9.9	10.1	10.3	12.0
Coal subtotal	**49.4**	**50.8**	**55.7**	**55.1**	**62.2**
Metalliferous—surface	17.5	18.1	17.5	15.0	17.9
Metalliferous—underground	10.0	10.2	12.3	9.0	9.8
Metalliferous subtotal	**27.5**	**28.3**	**29.8**	**24.0**	**27.6**
Quarries	2.4	2.2	2.9	2.3	3.1
All operations	**79.3**	**81.4**	**88.3**	**81.4**	**92.9**

4. Lag performance indicators: incident rates

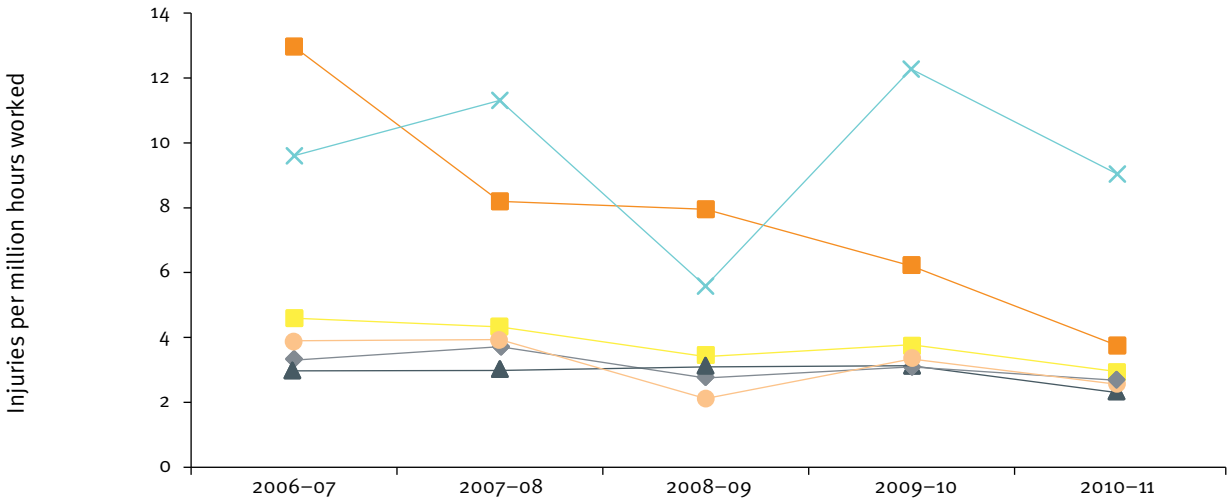
The following graphs and accompanying tables show five-year trends across a number of indicators used to assess safety and health performance across the industry. The data presented here are normalised either in terms of number of hours worked or the average days lost per injury. These normalised values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

The performance indicators plotted are:

- Figure 4.1: Lost time injury frequency rate, 2006–11
- Figure 4.2: Lost time injury severity rate (days away from work only), 2006–11
- Figure 4.3: Lost time injury duration rate (days away from work only), 2006–11
- Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2006–11
- Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2006–11
- Figure 4.6: Disabling injury frequency rate, 2006–11
- Figure 4.7: Disabling injury severity rate, 2006–11
- Figure 4.8: Disabling injury duration rate, 2006–11
- Figure 4.9: Lost time injury and disabling injury frequency rate, 2006–11
- Figure 4.10: Lost time injury and disabling injury severity rate, 2006–11
- Figure 4.11: Lost time and disabling injury duration rate, 2006–11
- Figure 4.12: Permanent incapacity frequency rate, 2006–11
- Figure 4.13: Fatality frequency rate, 2006–11
- Figure 4.14: Total recordable injury frequency rate for coal mines, 2006–11

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 in assessing industry performance.

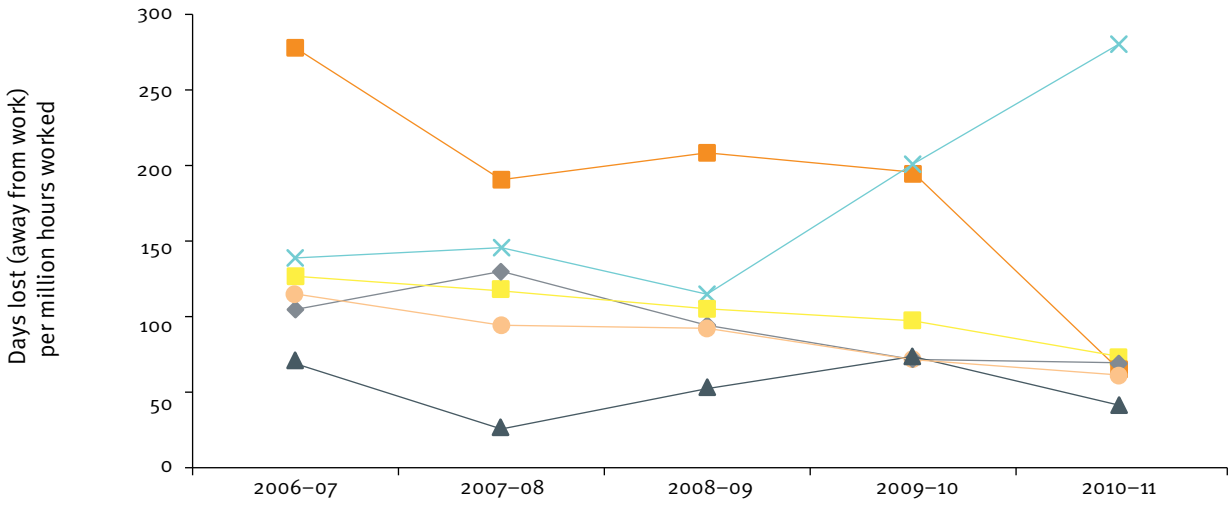
Figure 4.1: Lost time injury frequency rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	3.3	3.7	2.7	3.1	2.7
Coal—underground	13.0	8.2	7.9	6.2	3.7
Metalliferous—surface	3.0	3.0	3.1	3.1	2.3
Metalliferous—underground	3.9	3.9	2.1	3.3	2.6
Quarries	9.6	11.3	5.6	12.3	9.0
All operations	4.6	4.3	3.4	3.8	2.9

Financial year

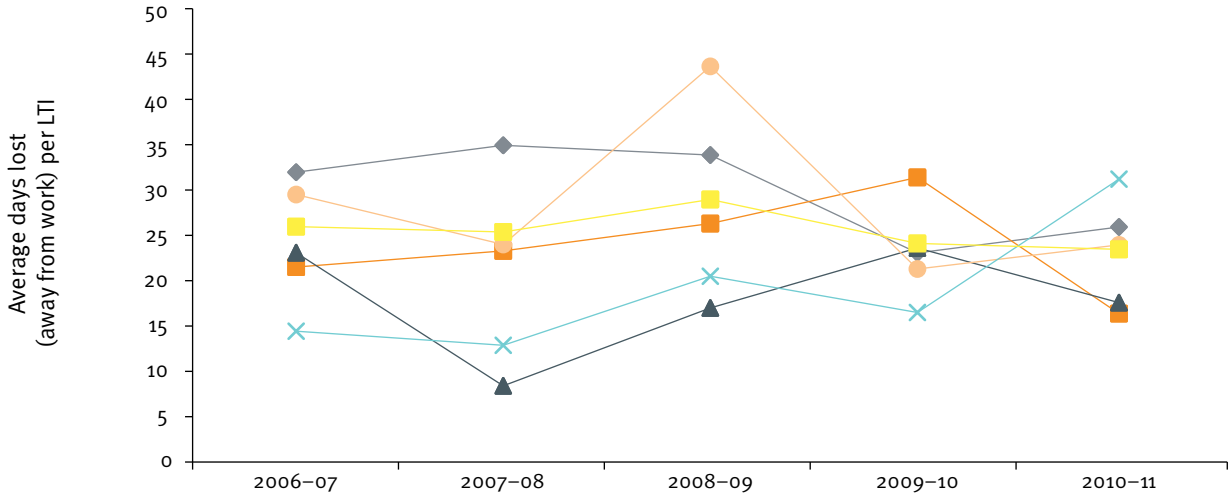
Figure 4.2: Lost time injury severity rate (days away from work only), 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	105	130	93	71	69
Coal—underground	279	191	209	195	61
Metalliferous—surface	69	25	53	74	40
Metalliferous—underground	115	94	92	71	61
Quarries	138	146	114	202	282
All operations	119	110	99	91	69

Financial year

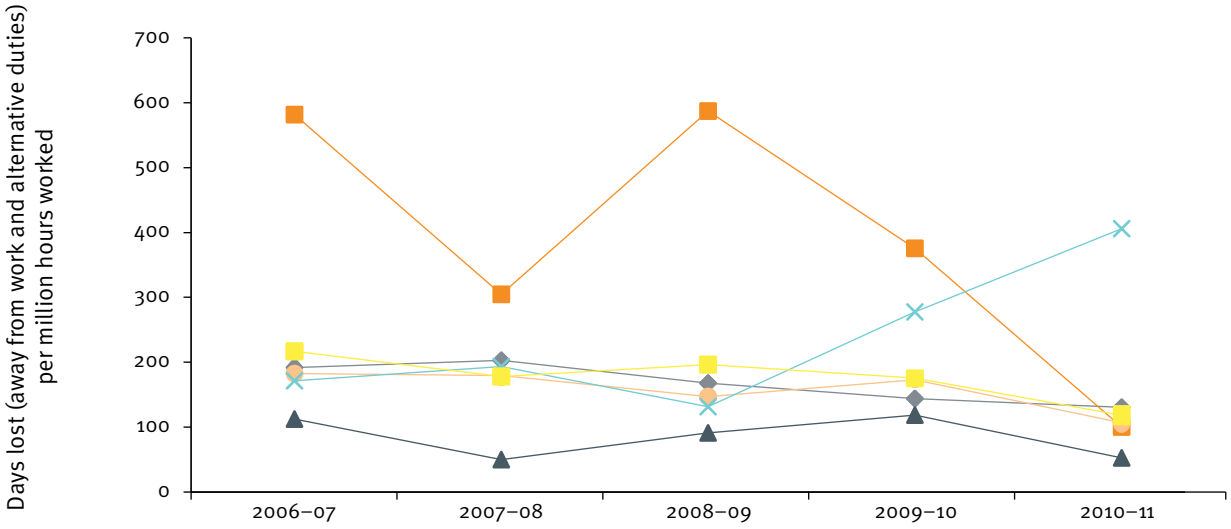
Figure 4.3: Lost time injury duration rate (days away from work only), 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	32.0	34.9	33.9	23.1	25.9
Coal—underground	21.5	23.3	26.3	31.4	16.4
Metalliferous—surface	23.1	8.4	17.0	23.6	17.6
Metalliferous—underground	29.5	24.0	43.7	21.3	24.0
Quarries	14.4	12.9	20.5	16.5	31.2
All operations	26.0	25.4	29.0	24.1	23.5

Financial year

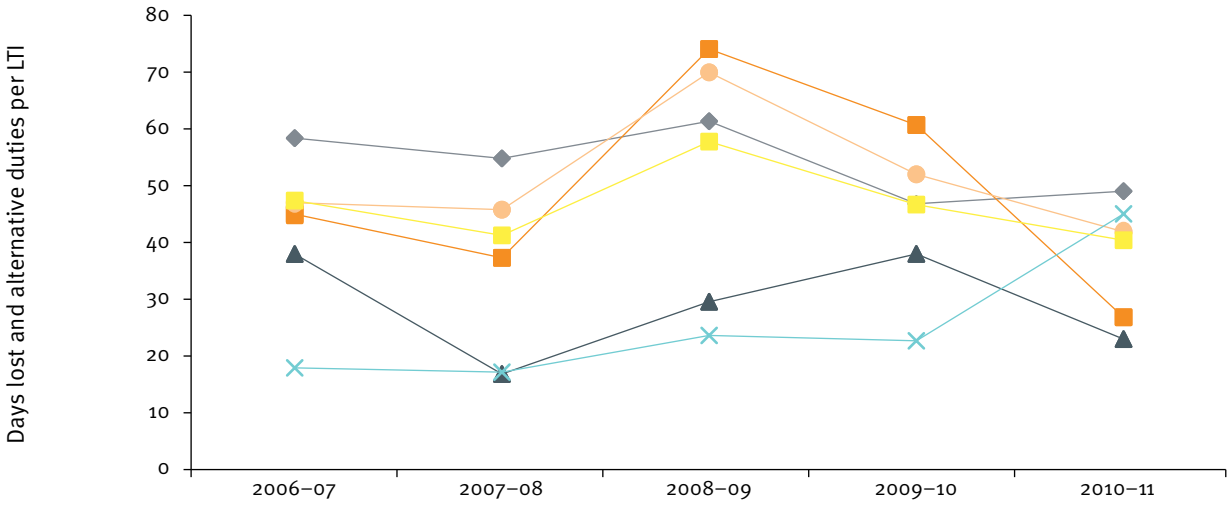
Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	192	203	168	144	131
Coal—underground	583	305	589	376	100
Metalliferous—surface	113	50	91	119	53
Metalliferous—underground	183	180	147	173	107
Quarries	172	194	132	278	407
All operations	217	178	197	176	119

Financial year

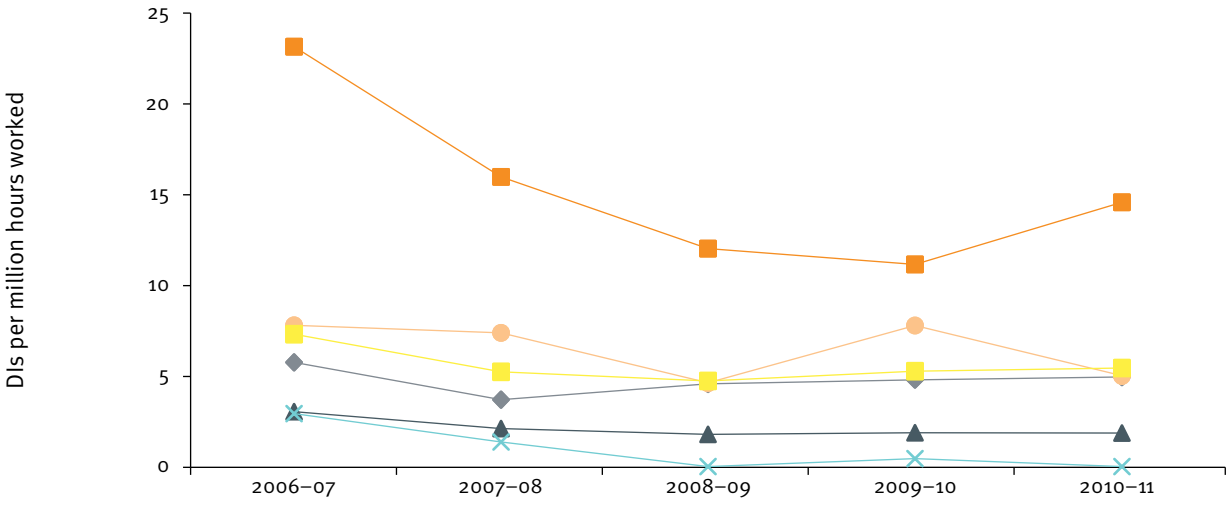
Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	58.4	54.8	61.4	46.8	49.0
Coal—underground	45.0	37.3	74.1	60.7	26.8
Metalliferous—surface	38.0	16.8	29.6	38.0	23.0
Metalliferous—underground	47.0	45.8	70.0	52.0	41.9
Quarries	17.9	17.2	23.6	22.7	45.0
All operations	47.4	41.3	57.8	46.7	40.4

Financial year

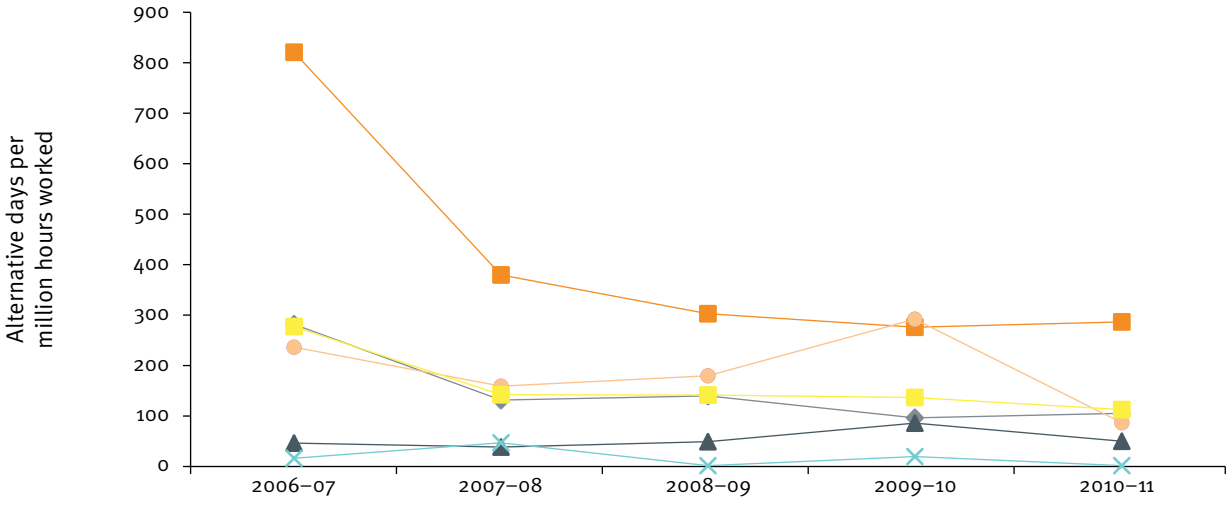
Figure 4.6: Disabling injury frequency rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	5.7	3.7	4.6	4.8	4.9
Coal—underground	23.2	16.0	12.0	11.1	14.6
Metalliferous—surface	3.0	2.1	1.8	1.9	1.8
Metalliferous—underground	7.8	7.4	4.6	7.8	5.0
Quarries	2.9	1.4	0.0	0.4	0.0
All operations	7.3	5.2	4.7	5.3	5.4

Financial year

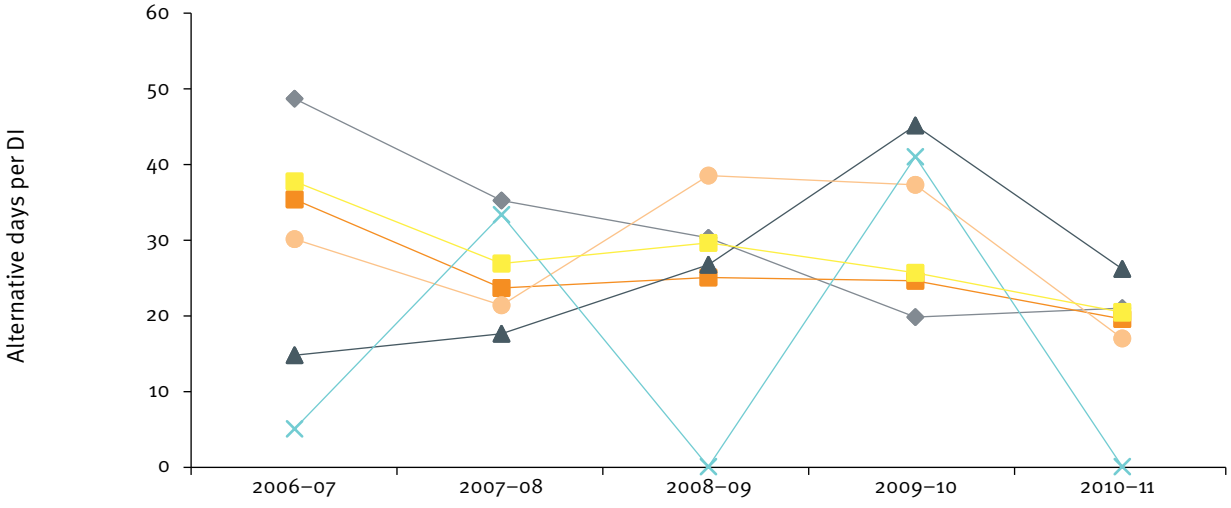
Figure 4.7: Disabling injury severity rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	280	130	138	95	104
Coal—underground	819	378	301	274	285
Metalliferous—surface	45	37	47	84	48
Metalliferous—underground	234	157	178	290	85
Quarries	15	45	0	18	0
All operations	275	140	140	135	111

Financial year

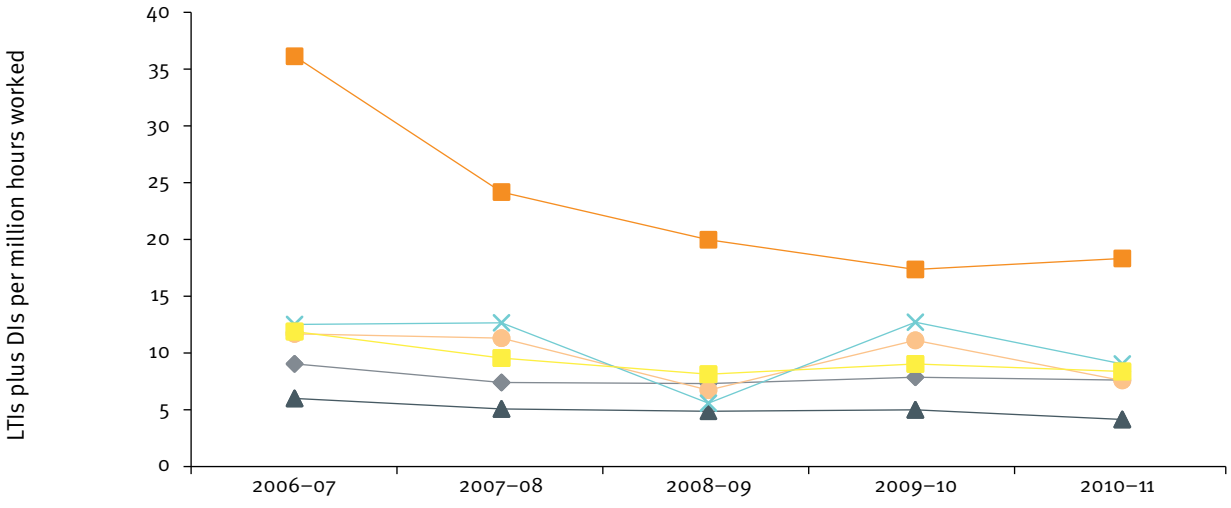
Figure 4.8: Disabling injury duration rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	48.7	35.2	30.3	19.8	21.0
Coal—underground	35.4	23.6	25.0	24.6	19.5
Metalliferous—surface	14.7	17.6	26.7	45.1	26.2
Metalliferous—underground	30.1	21.3	38.5	37.3	17.0
Quarries	5.0	33.3	0.0	41.0	0.0
All operations	37.7	26.9	29.6	25.6	20.4

Financial year

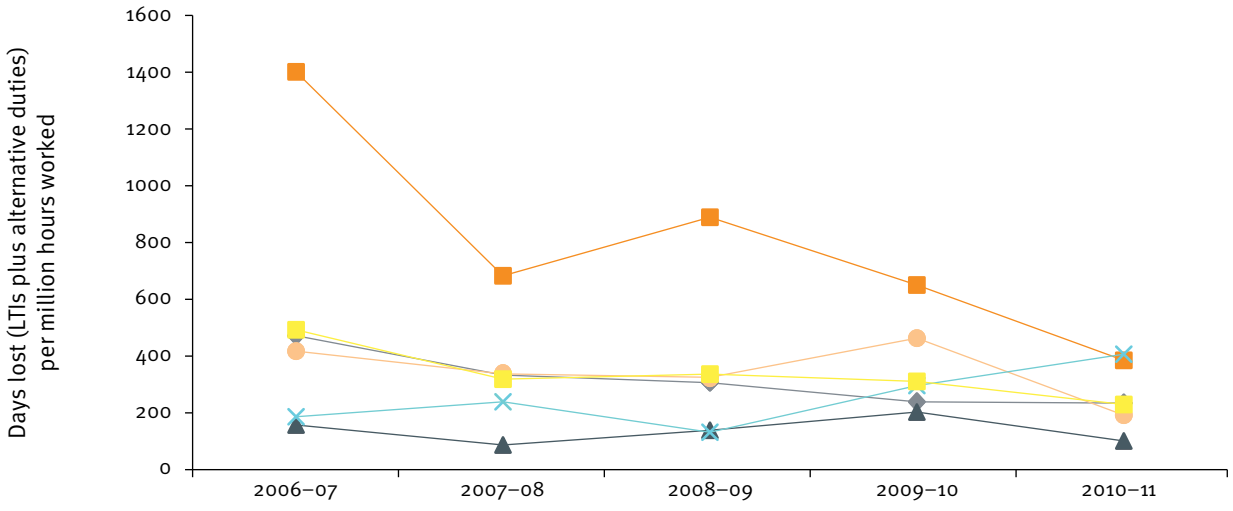
Figure 4.9: Lost time injury plus disabling injury frequency rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	9.0	7.4	7.3	7.9	7.6
Coal—underground	36.1	24.2	20.0	17.3	18.3
Metalliferous—surface	6.0	5.1	4.9	5.0	4.1
Metalliferous—underground	11.7	11.3	6.7	11.1	7.6
Quarries	12.5	12.7	5.6	12.7	9.0
All operations	11.9	9.5	8.1	9.0	8.4

Financial year

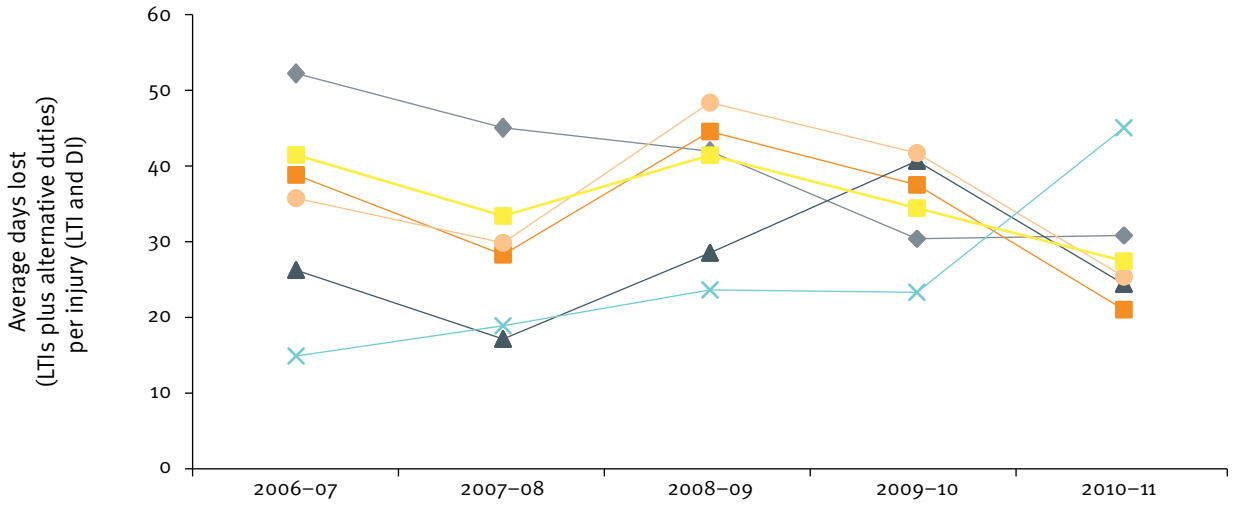
Figure 4.10: Lost time injury and disabling injury severity rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	472	333	306	239	234
Coal—underground	1402	683	889	651	385
Metalliferous—surface	157	87	139	203	101
Metalliferous—underground	417	337	325	463	192
Quarries	186	239	132	296	407
All operations	493	319	337	311	230

Financial year

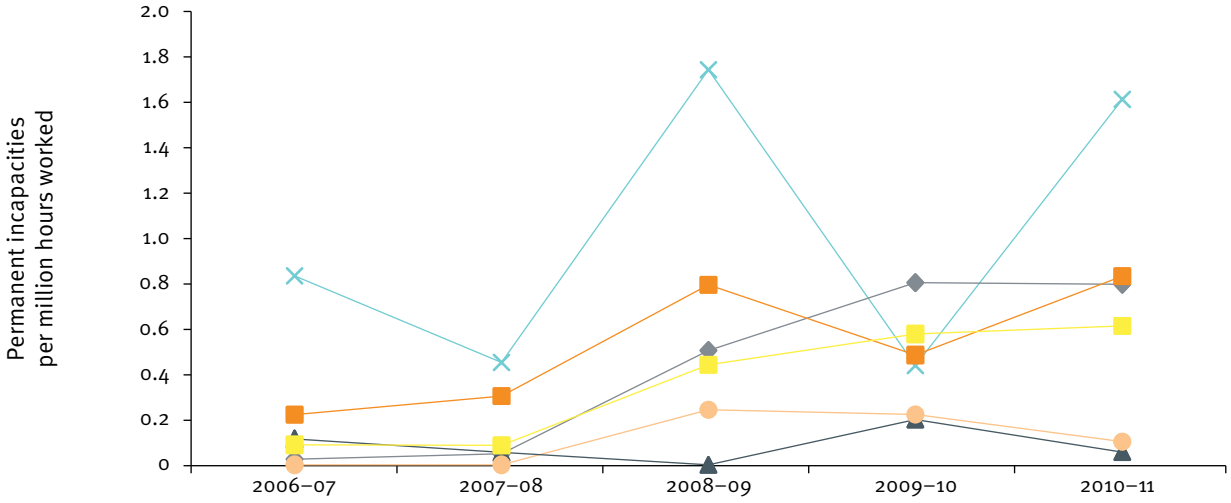
Figure 4.11: Lost time injury and disabling injury duration rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	52.2	45.0	41.9	30.4	30.8
Coal—underground	38.8	28.3	44.5	37.5	21.0
Metalliferous—surface	26.2	17.1	28.5	40.7	24.4
Metalliferous—underground	35.7	29.8	48.4	41.7	25.4
Quarries	14.9	18.9	23.6	23.3	45.0
All operations	41.5	33.4	41.4	34.4	27.4

Financial year

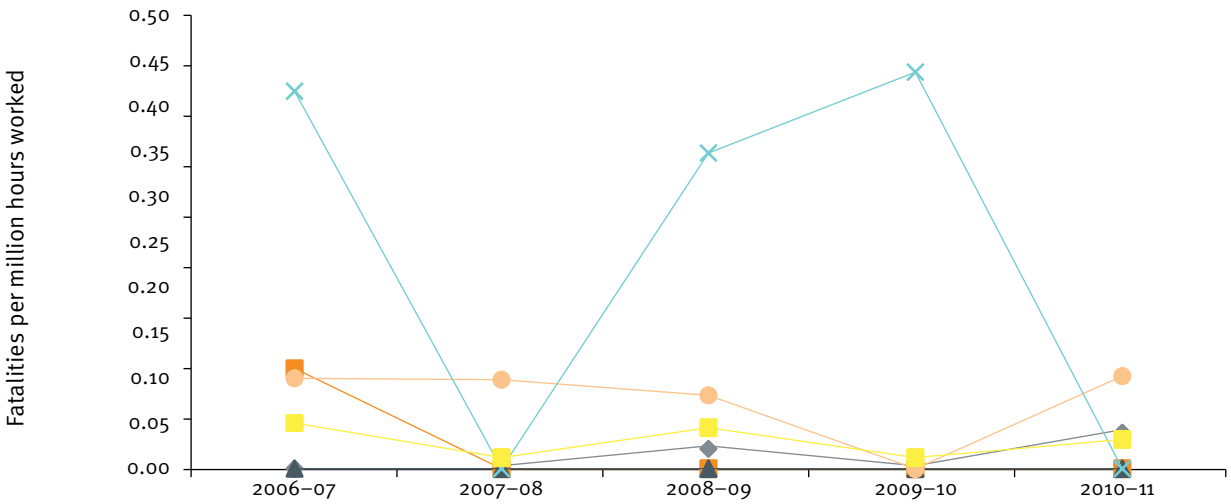
Figure 4.12: Permanent incapacity frequency rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	0.02	0.05	0.50	0.80	0.80
Coal—underground	0.22	0.30	0.79	0.48	0.83
Metalliferous—surface	0.11	0.06	0.00	0.20	0.06
Metalliferous—underground	0.00	0.00	0.24	0.22	0.10
Quarries	0.83	0.45	1.74	0.44	1.61
All operations	0.09	0.09	0.44	0.58	0.61

Financial year

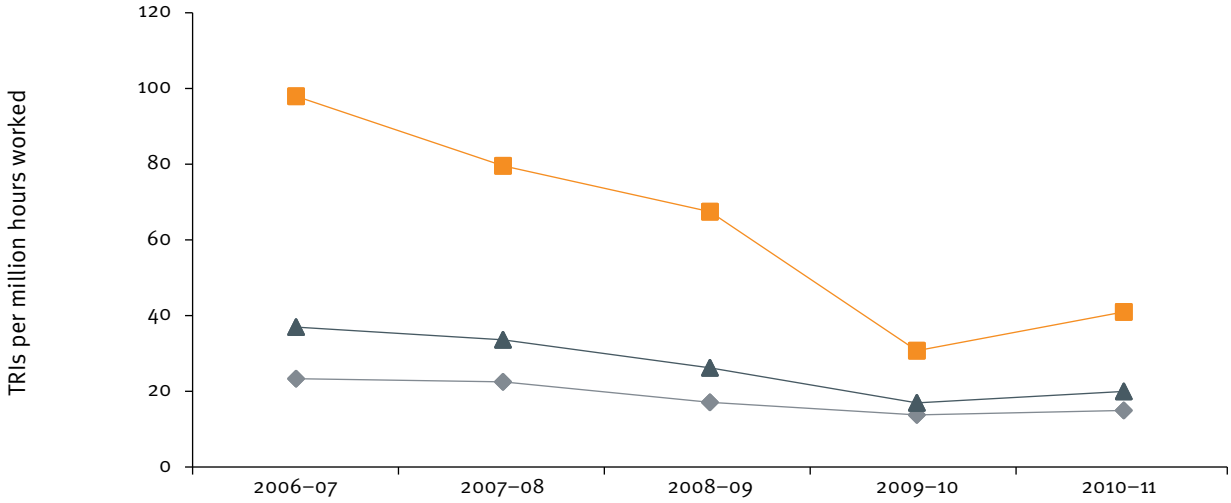
Figure 4.13: Fatality frequency rate, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	0.00	0.00	0.02	0.00	0.04
Coal—underground	0.11	0.00	0.00	0.00	0.00
Metalliferous—surface	0.00	0.00	0.00	0.00	0.00
Metalliferous—underground	0.10	0.10	0.08	0.00	0.10
Quarries	0.42	0.00	0.35	0.44	0.00
All operations	0.05	0.01	0.05	0.01	0.03

Financial year

Figure 4.14: Total recordable injury frequency rate for coal mines, 2006–11



	2006–07	2007–08	2008–09	2009–10	2010–11
Coal—surface	23.3	22.5	17.1	13.8	14.9
Coal—underground	97.9	79.6	67.4	30.7	41.0
Coal total	37.0	33.6	26.2	16.9	20.0

Financial year


DANGER
MEN WORKING
IN SHAFT WHEN
LIGHT FLASHING
NO TRAVELLING
ON LADDERWAY

5. Injury classification data

The LTI data collected for all sectors have been classified as follows:

- Figure 5.1: Body parts injured, 2008–11
- Figure 5.2: Nature of injury, 2008–11
- Figure 5.3: Mechanism of injury (the action, exposure or event that is the direct cause of the most serious injury), 2008–11
- Figure 5.4: Breakdown agency—equipment (the equipment that was principally involved in, or most closely associated with, the injury), 2008–11
- Figure 5.5: Occurrence class of injuries—activity (the activity that was principally involved in, or most closely associated with, the injury), 2008–11
- Figure 5.6: Age distribution (coal industry), 1996–2011
- Figure 5.7: Number of days lost per age group to lost time injuries, 2011

Significant results from this classification include:

- Back and hand injuries account for almost 37% of injuries as shown in Figure 5.1.
- Sprains and strains account for 44% of injuries as shown in Figure 5.2.
- Falls/slips/trips account for almost 24% of injuries as shown in Figure 5.3.
- Earthmoving equipment accounts for almost 15% of injuries as shown in Figure 5.4.
- Manual handling of equipment/material accounts for 42% of injuries as shown in Figure 5.5.

Figure 5.1: Body parts injured, 2008–11

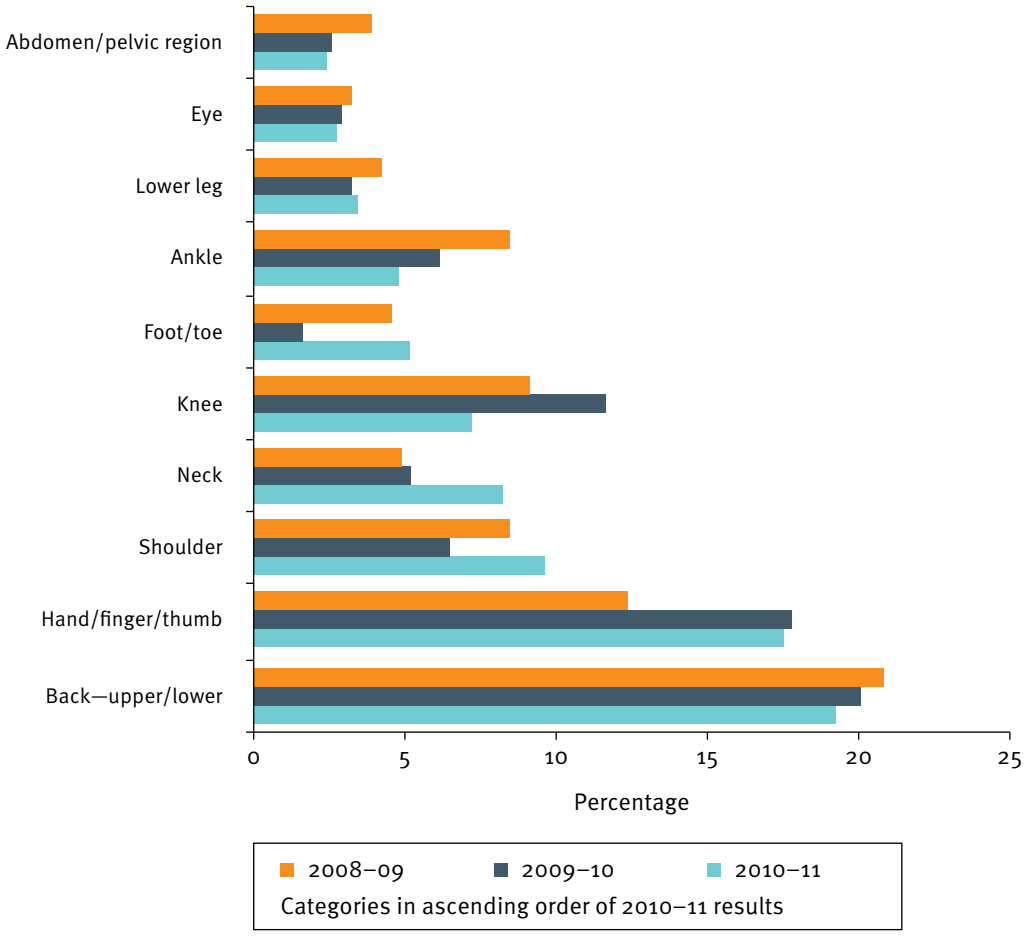


Figure 5.2: Nature of injury, 2008–11

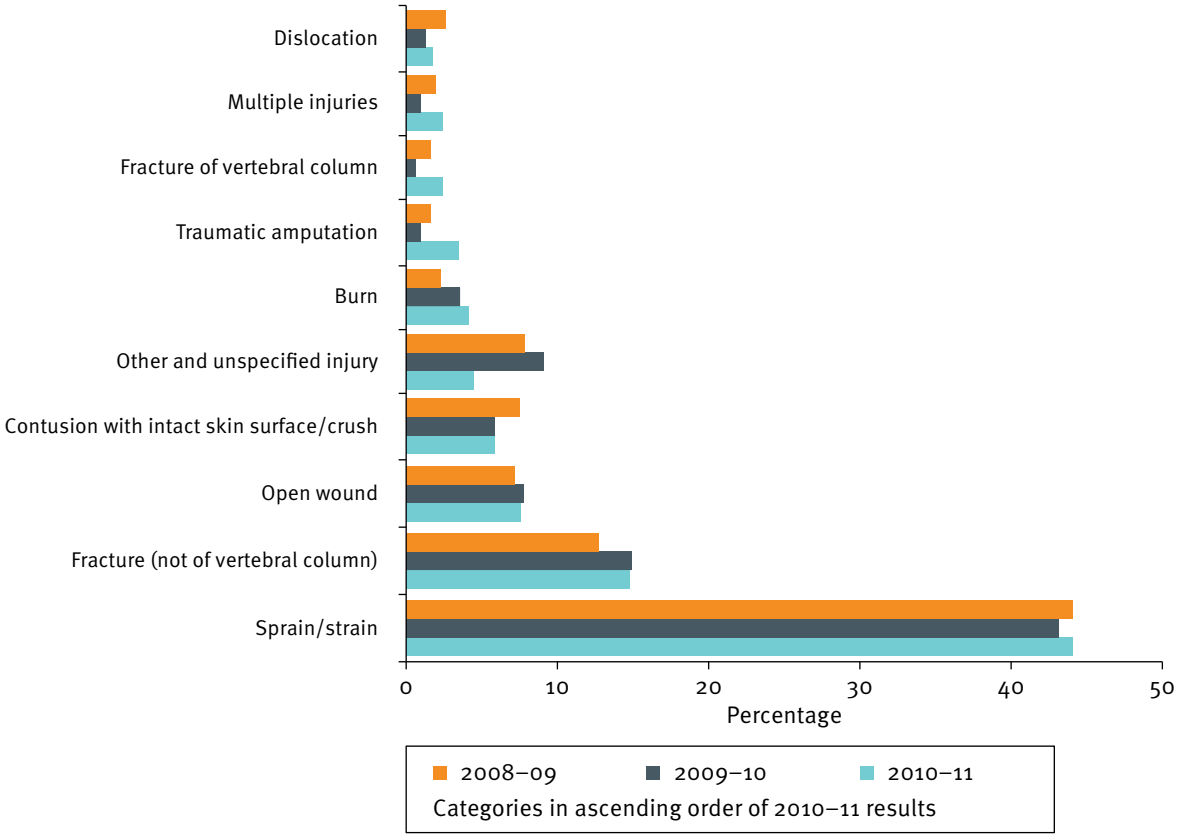


Figure 5.3: Mechanism of injury (the action, exposure or event that is the direct cause of the most serious injury), 2008–11

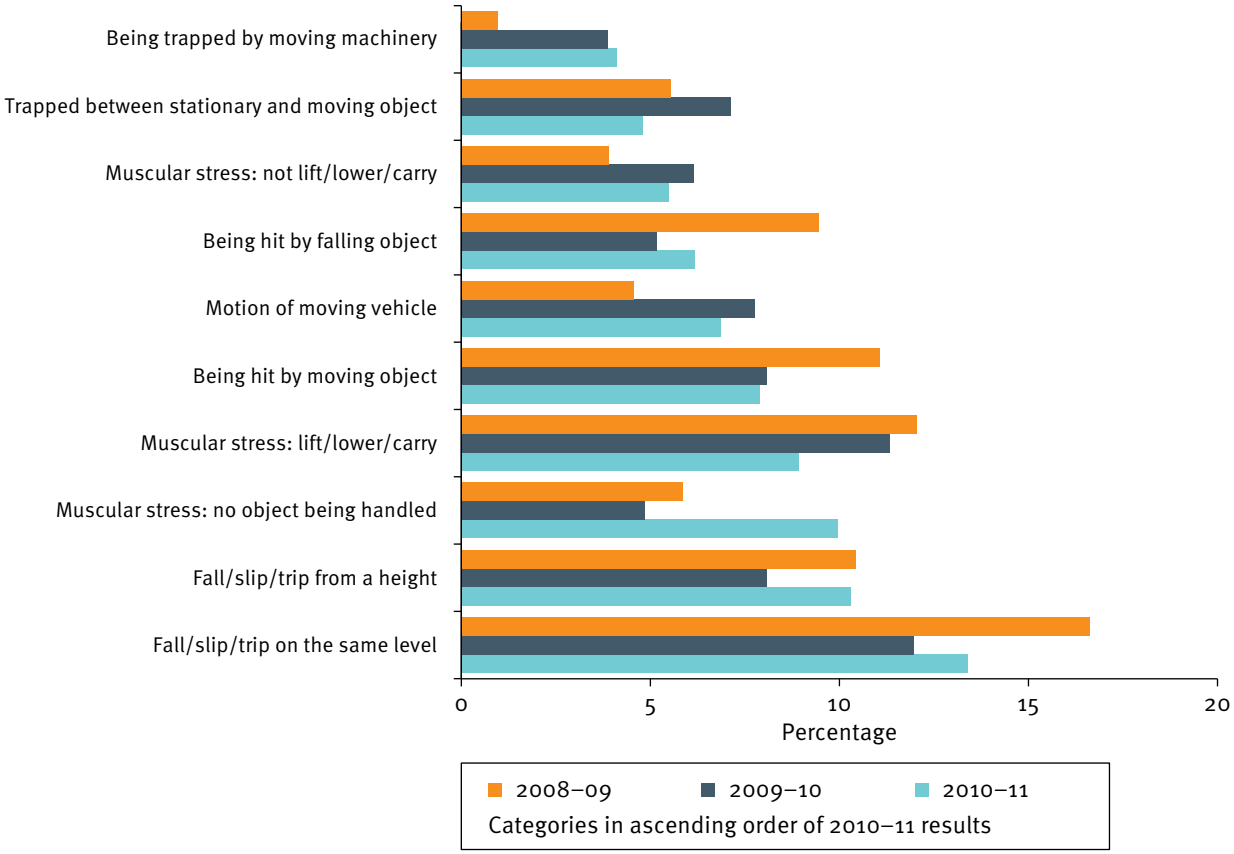


Figure 5.4: Breakdown agency—equipment (the equipment that was principally involved in, or most closely associated with, the injury), 2008–11

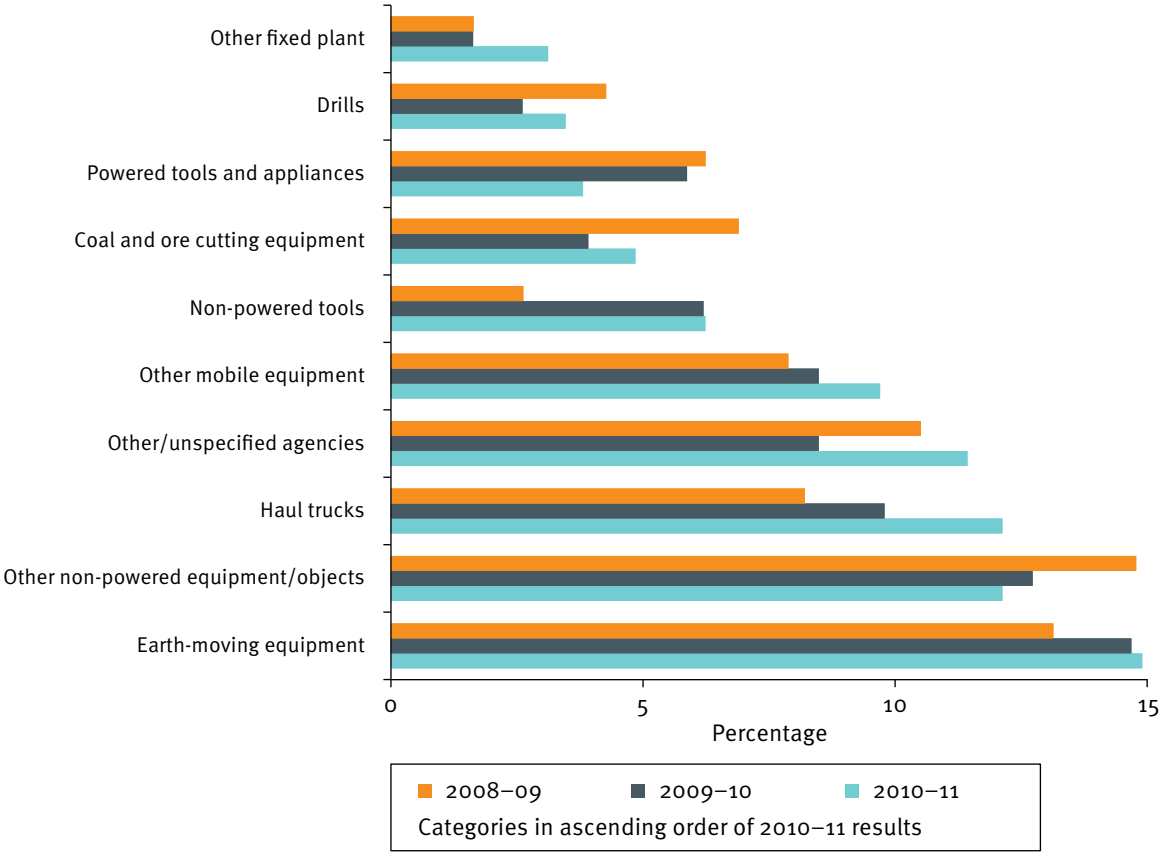
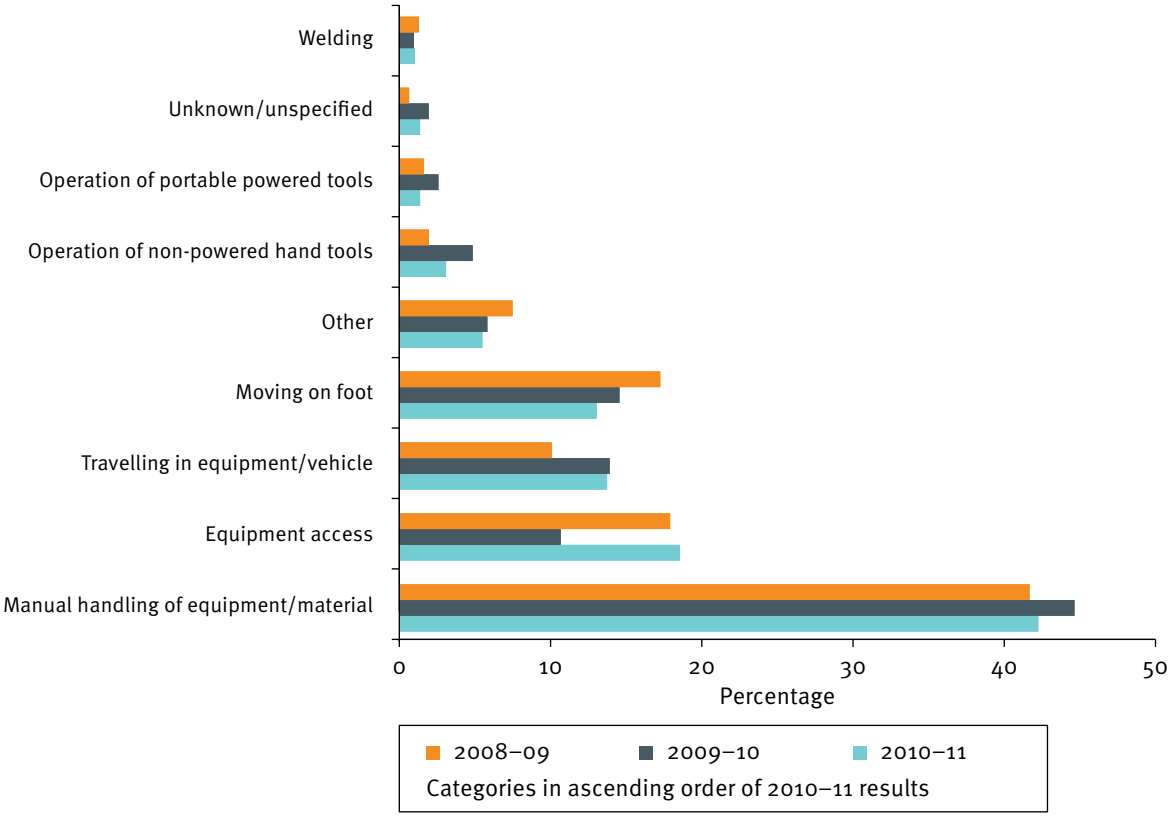


Figure 5.5: Occurence class of injuries—activity (the activity that was principally involved in, or most closely associated with, the injury), 2008–11



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 1996 to 2011 is 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 (2004–11) across ten-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
- breakdown agency—circumstance.

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), 1996–2011

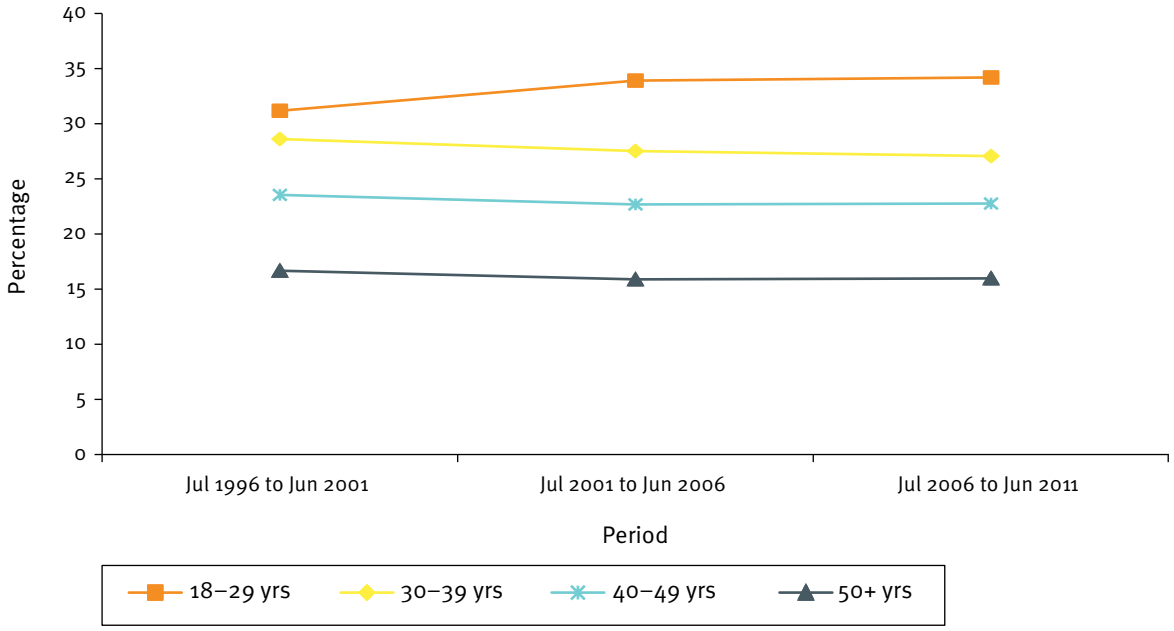


Figure 5.7: Number of days lost per age group to lost time injuries, 2011

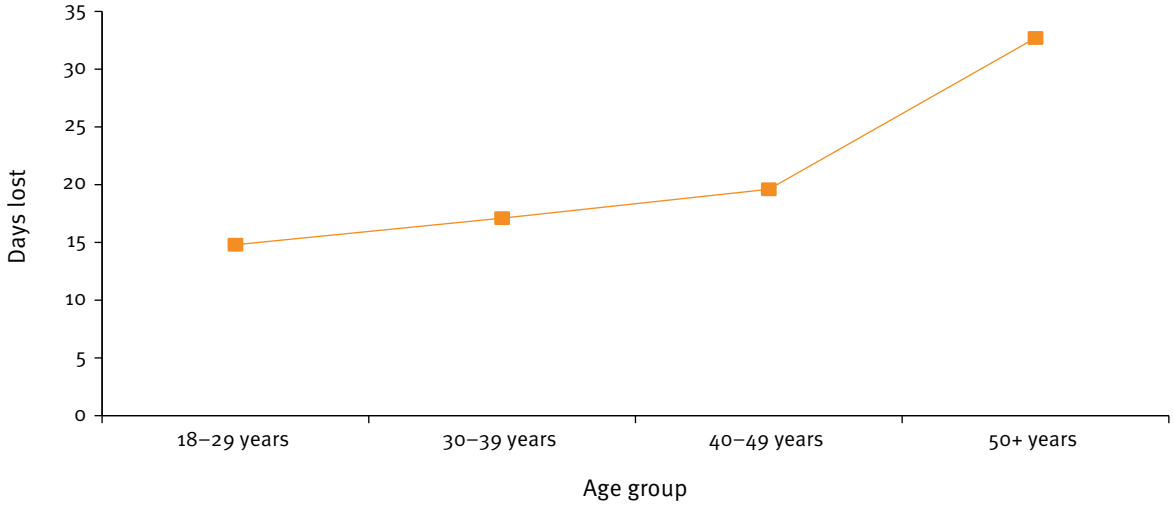


Table 5.1: Lost time injuries in all sectors—percentage of type across all groups, 2004–11

		18–29 yr old (20s) 22.9% of all LTIs		30–39 yr old (30s) 29.3% of all LTIs		40–49 yr old (40s) 25.9% of all LTIs		50+ yr old (50s) 21.8% 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	31.8	7.3	45.4	13.3	45.2	11.7	48.4	10.5
	Fracture (not of vertebral column)	14.6	3.4	14.0	4.1	15.6	4.1	13.0	2.8
	Open wound	10.0	2.3	5.1	1.5	6.5	1.7	7.9	1.7
	Contusion with intact skin surface/crush	8.9	2.0	7.5	2.2	7.5	1.9	4.9	1.1
	Other and unspecified injury	7.1	1.6	6.5	1.9	7.3	1.9	6.9	1.5
	Burn	5.8	1.3	4.2	1.2	2.4	0.6	2.2	0.5
	Foreign body (not superficial skin injury)	4.2	1.0	2.1	0.6	2.0	0.5	1.4	0.3
Mechanism of injury	Fall/slip/trip on the same level	12.3	2.8	12.9	3.8	16.0	4.1	13.8	3.0
	Being hit by moving object	11.9	2.7	8.3	2.4	6.3	1.6	6.9	1.5
	Being hit by falling object	10.4	2.4	6.0	1.8	6.5	1.7	7.7	1.7
	Muscular stress—lift/lower/carry object	8.9	2.0	11.6	3.4	9.4	2.4	9.9	2.2
	Trapped between stationary and moving object	8.7	2.0	6.6	1.9	4.1	1.1	4.7	1.0
	Fall/slip/trip from a height	6.0	1.4	6.9	2.0	11.7	3.0	13.0	2.8
	Muscular stress—no object being handled	5.2	1.2	5.4	1.6	5.1	1.3	6.7	1.5
	Being trapped by moving machinery	4.2	1.0	3.6	1.1	3.2	0.8	1.2	0.3
	Hitting moving object	4.0	0.9	1.5	0.4	2.2	0.6	2.4	0.5
	Motion of moving vehicle	3.7	0.8	6.9	2.0	6.5	1.7	5.7	1.2
	Muscular stress—handling object not lift/lower/carry	3.3	0.8	5.3	1.5	4.6	1.2	6.9	1.5
	Unspecified mechanisms of injury	2.9	0.7	3.6	1.1	3.4	0.9	2.8	0.6
	Single contact with chemical substance	2.7	0.6	2.3	0.7	1.0	0.3	0.8	0.2
	Contact with hot object	2.3	0.5	2.1	0.6	1.5	0.4	1.4	0.3
	Hitting stationary object	2.3	0.5	3.5	1.0	5.3	1.4	4.5	1.0
Breakdown agency—circumstance	Working on equipment	24.3	5.6	17.7	5.2	16.3	4.2	16.2	3.5
	Moving on foot	13.7	3.1	14.1	4.1	17.9	4.6	19.6	4.3
	Other manual handling	10.4	2.4	12.2	3.6	12.4	3.2	13.0	2.8
	Other	9.1	2.1	10.1	3.0	8.0	2.1	5.3	1.1
	Travelling in equipment/vehicle	8.1	1.9	13.2	3.9	12.6	3.3	14.0	3.0
	Operation of non-powered hand tools	6.7	1.5	4.1	1.2	4.3	1.1	3.8	0.8
	Loading/unloading from vehicles	3.9	0.9	3.8	1.1	3.2	0.8	3.4	0.8
	Operation of portable powered tools	3.9	0.9	3.3	1.0	2.2	0.6	3.2	0.7
	Unknown/unspecified	3.3	0.8	2.4	0.7	2.0	0.5	1.6	0.4
	Other equipment access (e.g. moving about)	3.1	0.7	3.6	1.1	6.0	1.5	5.5	1.2
	Transporting manually (i.e. carrying, dragging)	3.1	0.7	2.9	0.8	2.6	0.7	2.0	0.4
	Descending—ground/floor involved	2.5	0.6	4.2	1.2	4.8	1.2	3.8	0.8
	Loading/unloading shelves, racks, bins, etc.	2.1	0.5	1.5	0.4	1.5	0.4	0.8	0.2
	Descending—ground/floor not involved	1.5	0.4	1.7	0.5	2.6	0.7	2.0	0.4
	Shovelling	1.5	0.4	0.9	0.3	0.3	0.1	0.4	0.1

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 already occurred.

Questions in relation to PPIs have been included in the mines 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 graphs as follows:

- Figure 6.1: Sites with a register of key hazards on site, 2008–11
- Figure 6.2: Sites where key hazards on site are identified using a formal system, 2008–11
- 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, 2008–11
- Figure 6.4.1–6.4.3: Workers and contractors routinely involved in conducting formal risk assessments, 2008–11
- Figure 6.5.1–6.5.3: Audits (internal and external) conducted in the previous 12 months, 2008–11
- Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2008–11
- Figure 6.7.1–6.7.3: Workers involved as auditors in internal audits during the previous 12 months, 2008–11
- Figure 6.8: Sites with a formal reporting system for capturing and reporting high potential incidents, 2008–11
- Figure 6.9: Improvement actions resulting from investigations into high-potential incidents, 2008–11

Figure 6.1: Sites with a register of key hazards on site, 2008–11

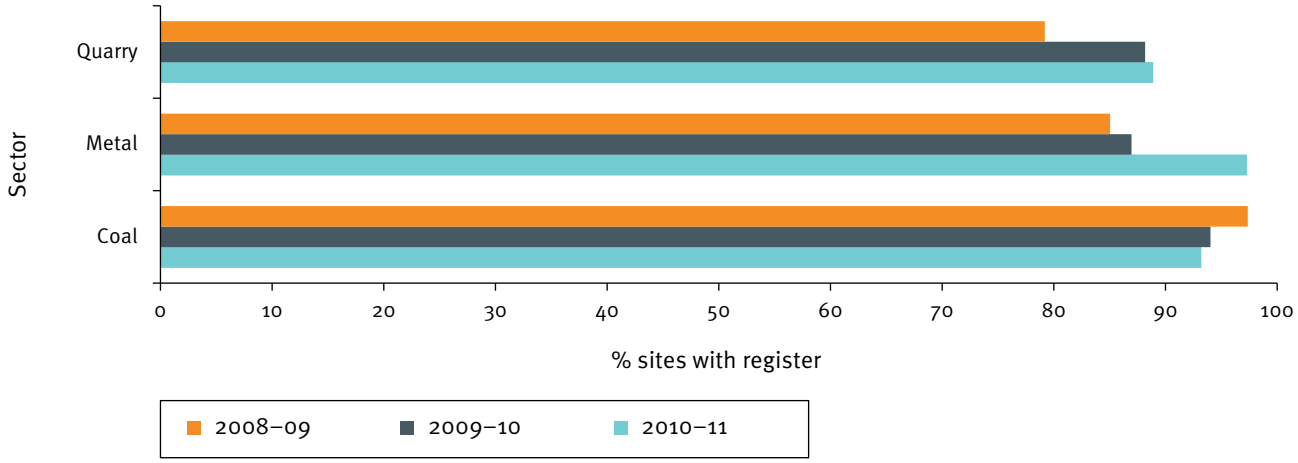


Figure 6.2: Sites where key hazards on site are identified using a formal system, 2008–11

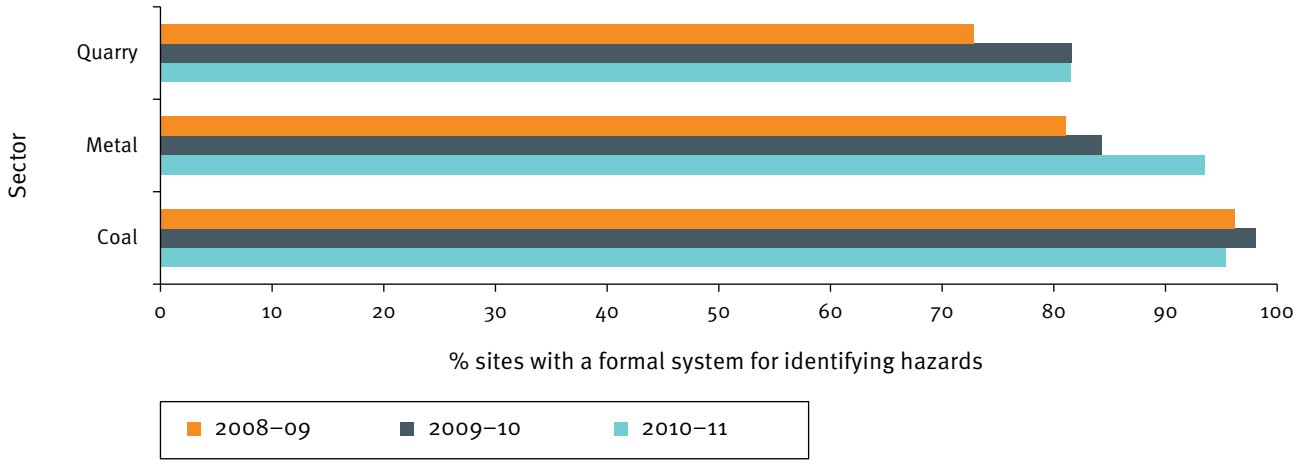


Figure 6.3.1: Coal sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2008–11

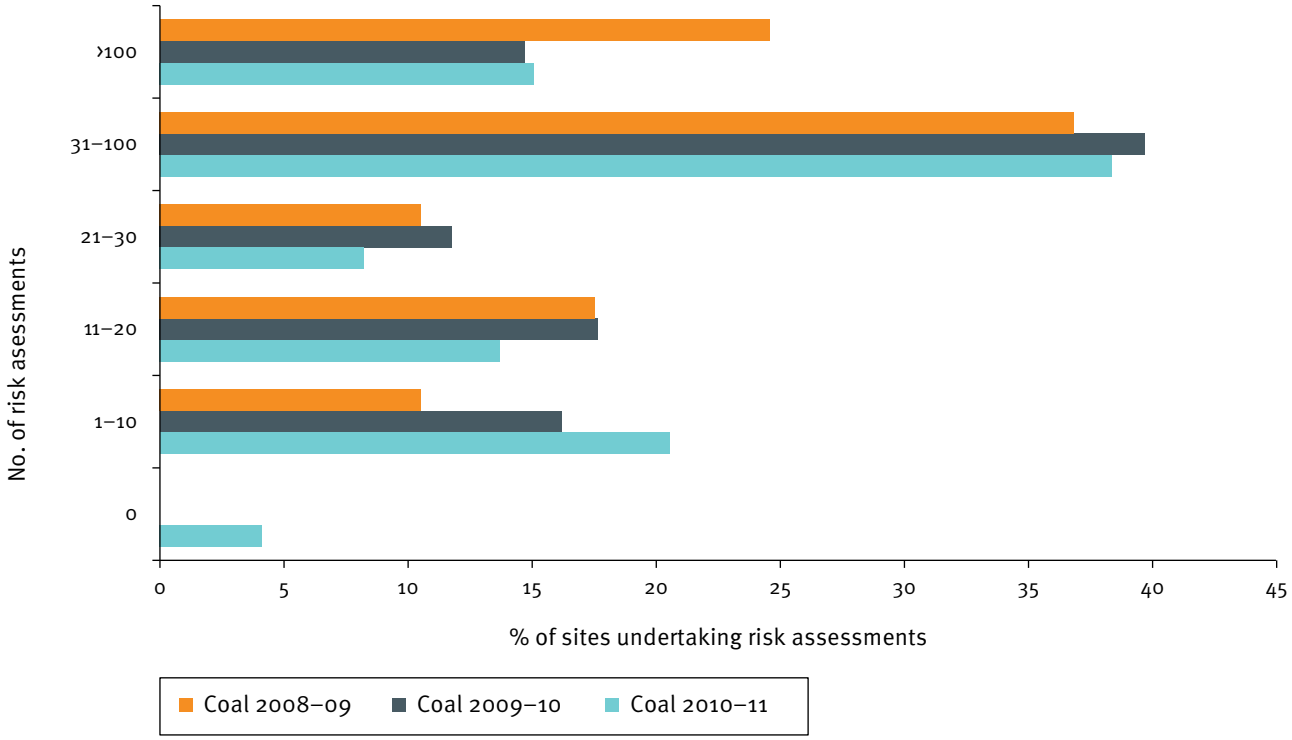


Figure 6.3.2: Metalliferous sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2008–11

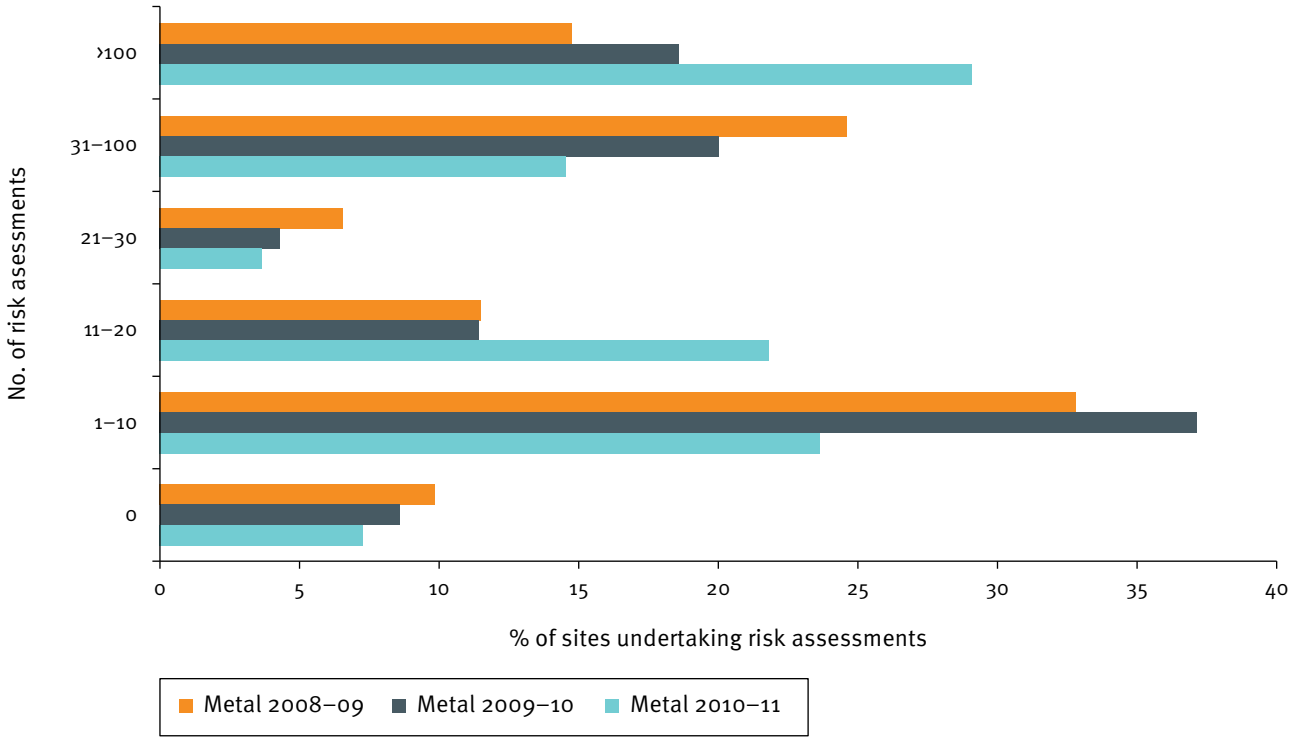


Figure 6.3.3: Quarry sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2008–11

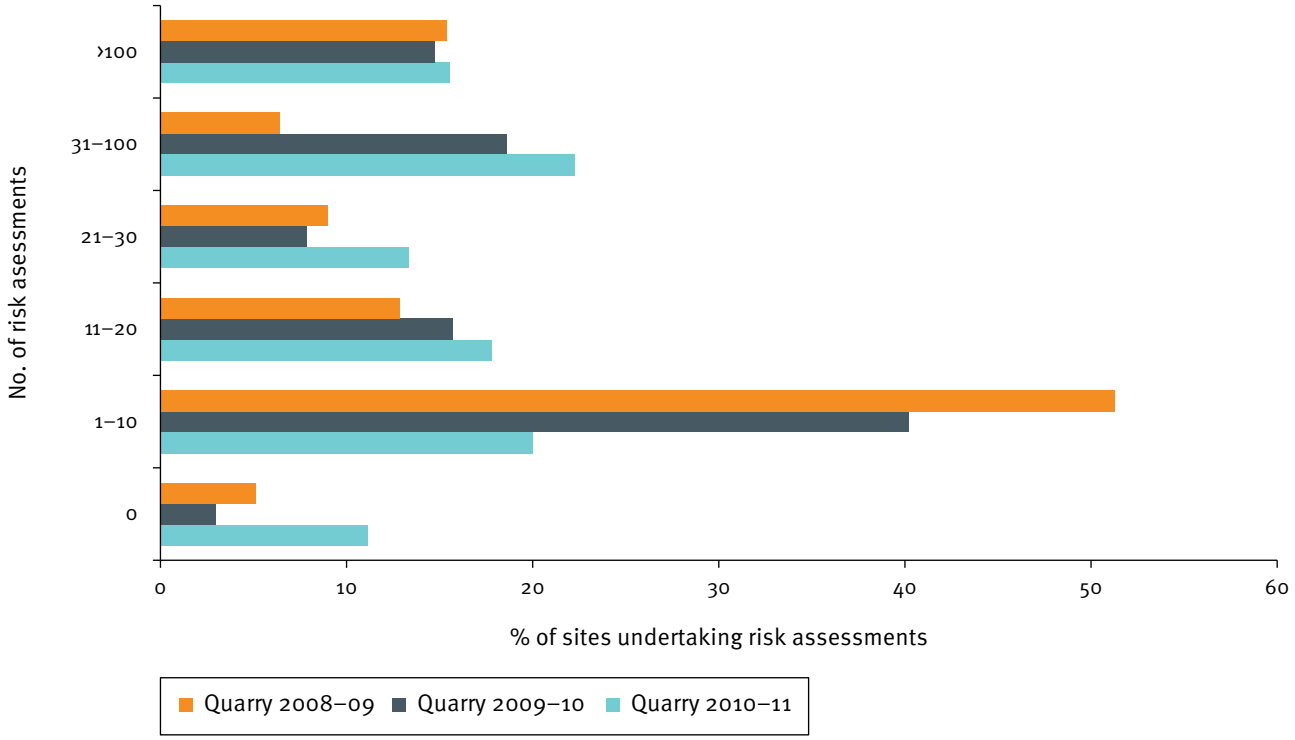


Figure 6.4.1: Coal sector workers and contractors routinely involved in conducting formal risk assessments, 2008–11

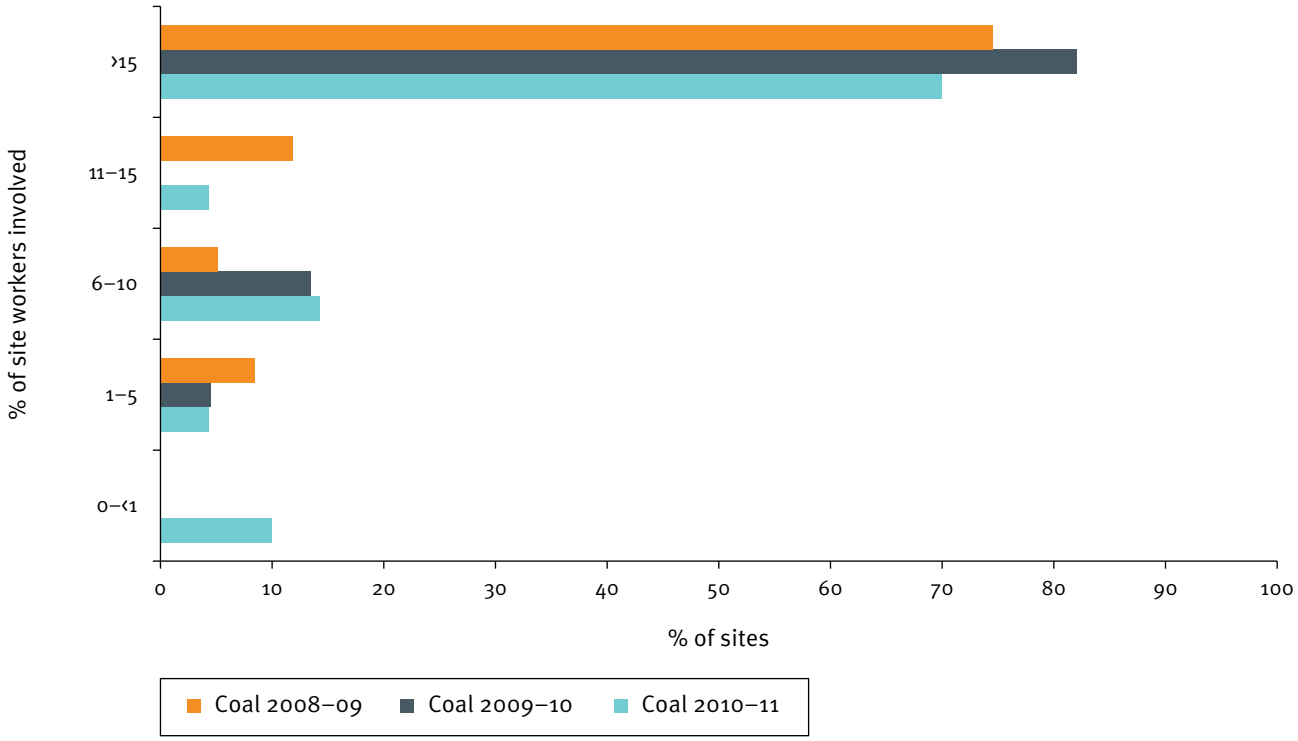


Figure 6.4.2: Metalliferous sector workers and contractors routinely involved in conducting formal risk assessments, 2008–11

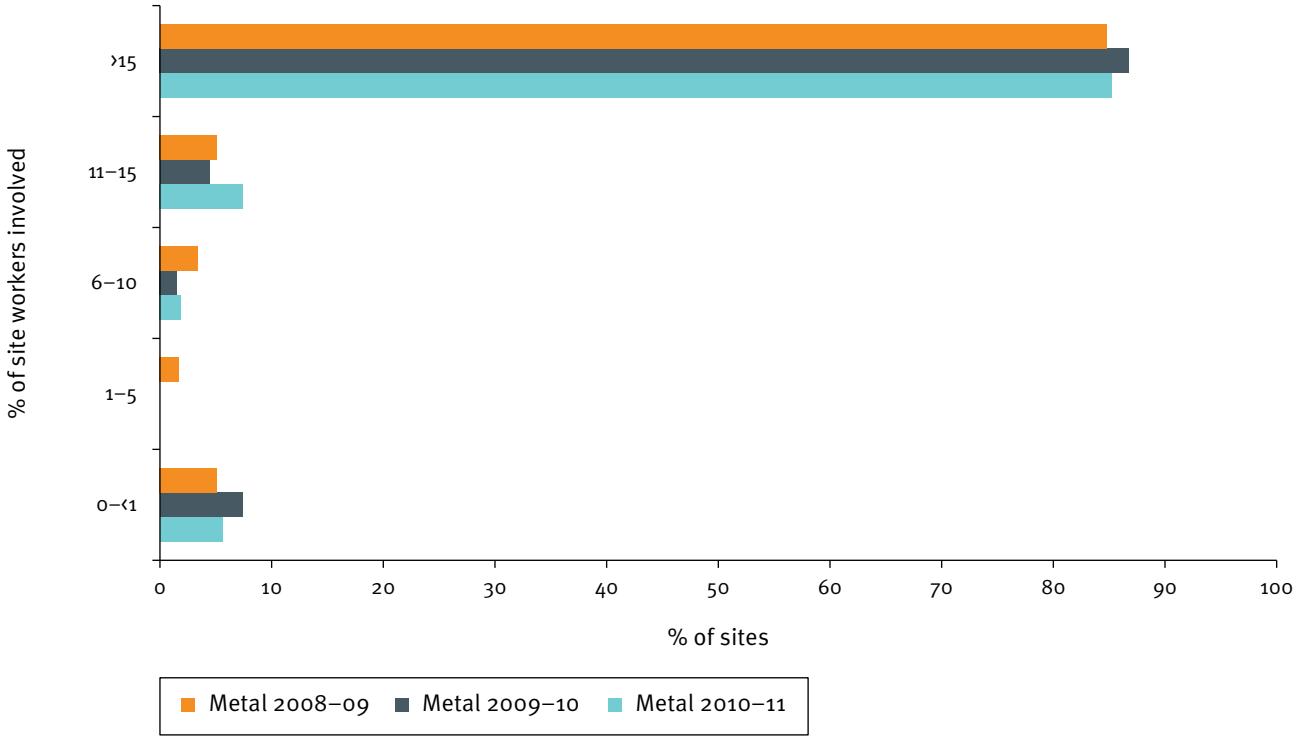


Figure 6.4.3: Quarry sector workers and contractors routinely involved in conducting formal risk assessments, 2008–11

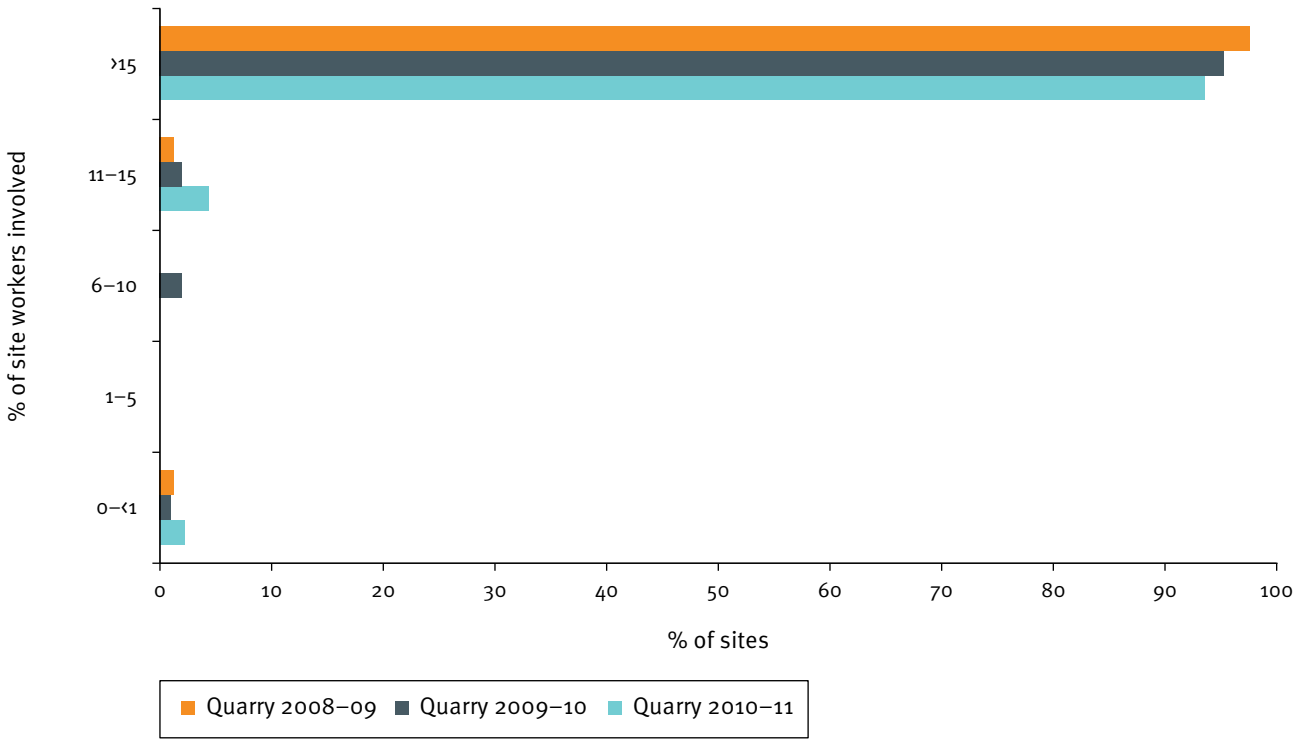


Figure 6.5.1: Coal sector audits (internal and external) conducted in the previous 12 months, 2008–11

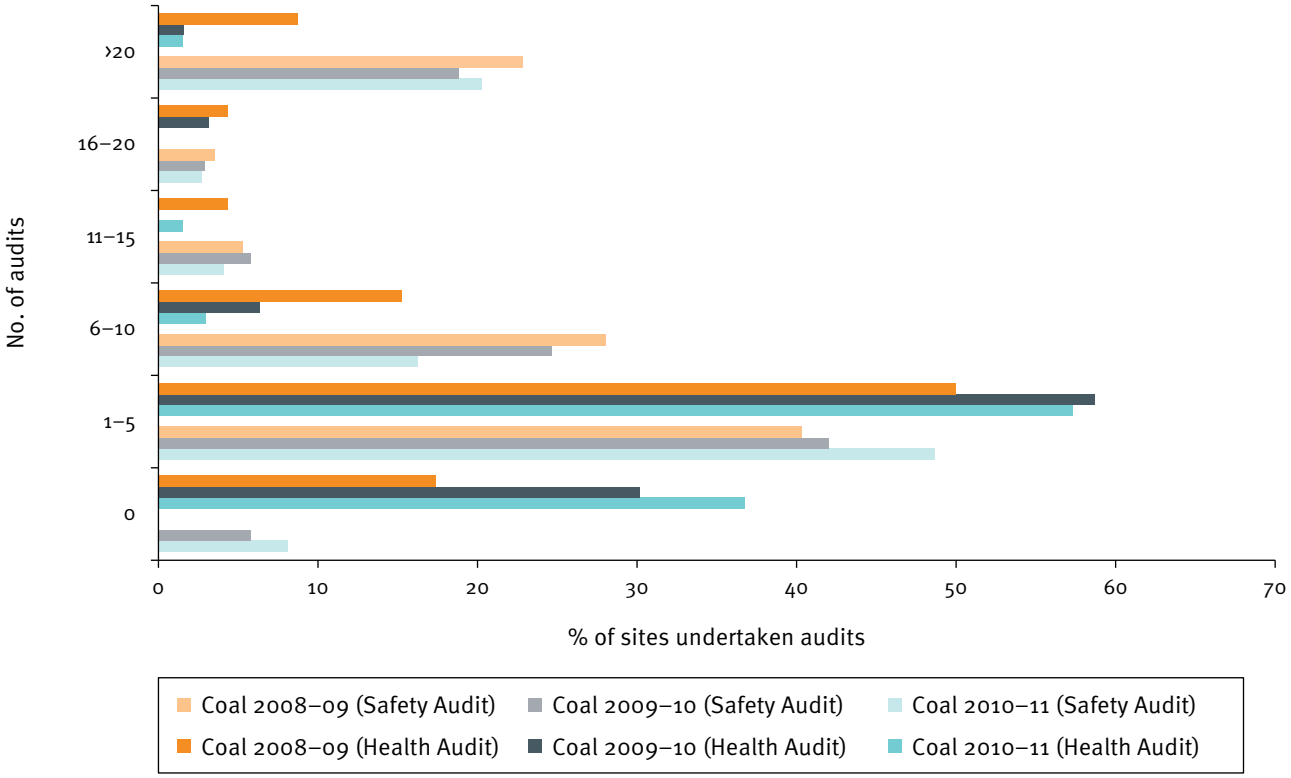


Figure 6.5.2: Metalliferous sector audits (internal and external) conducted in the previous 12 months, 2008–11

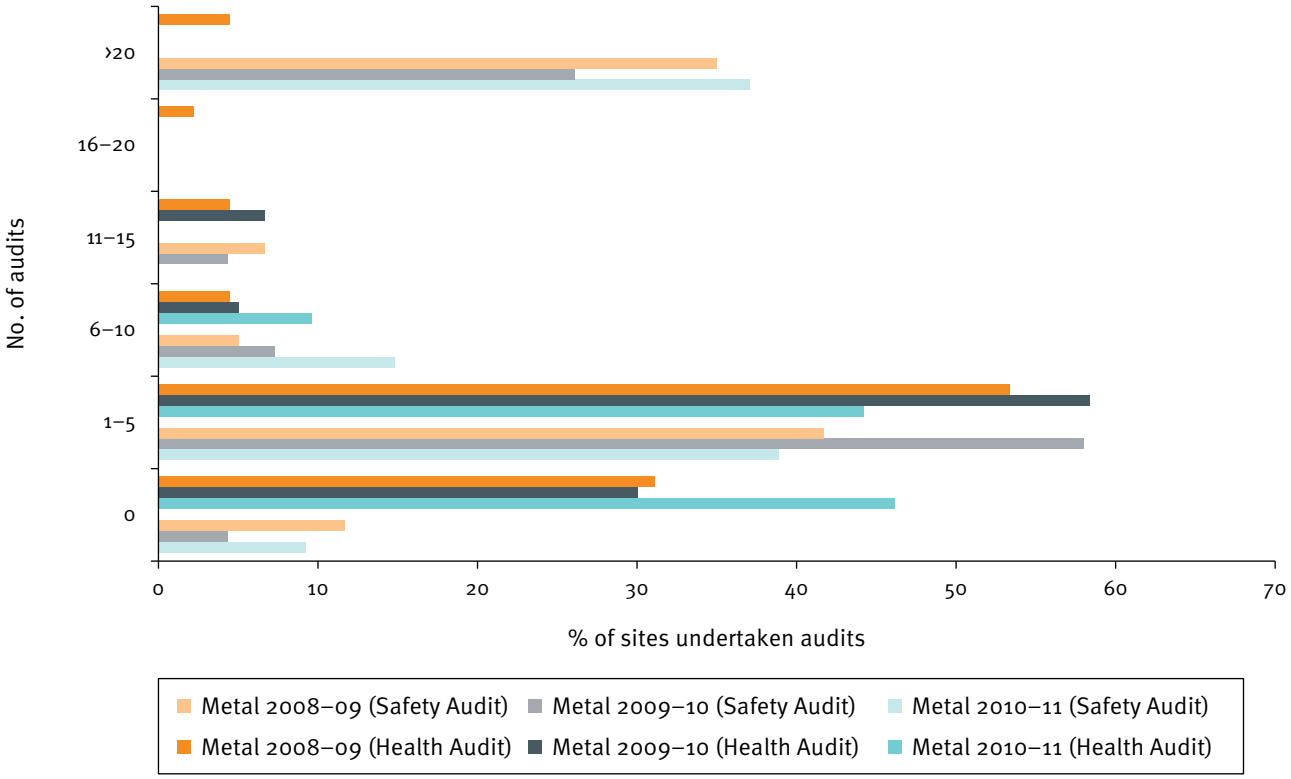


Figure 6.5.3: Quarry sector audits (internal and external) conducted in the previous 12 months, 2008–11

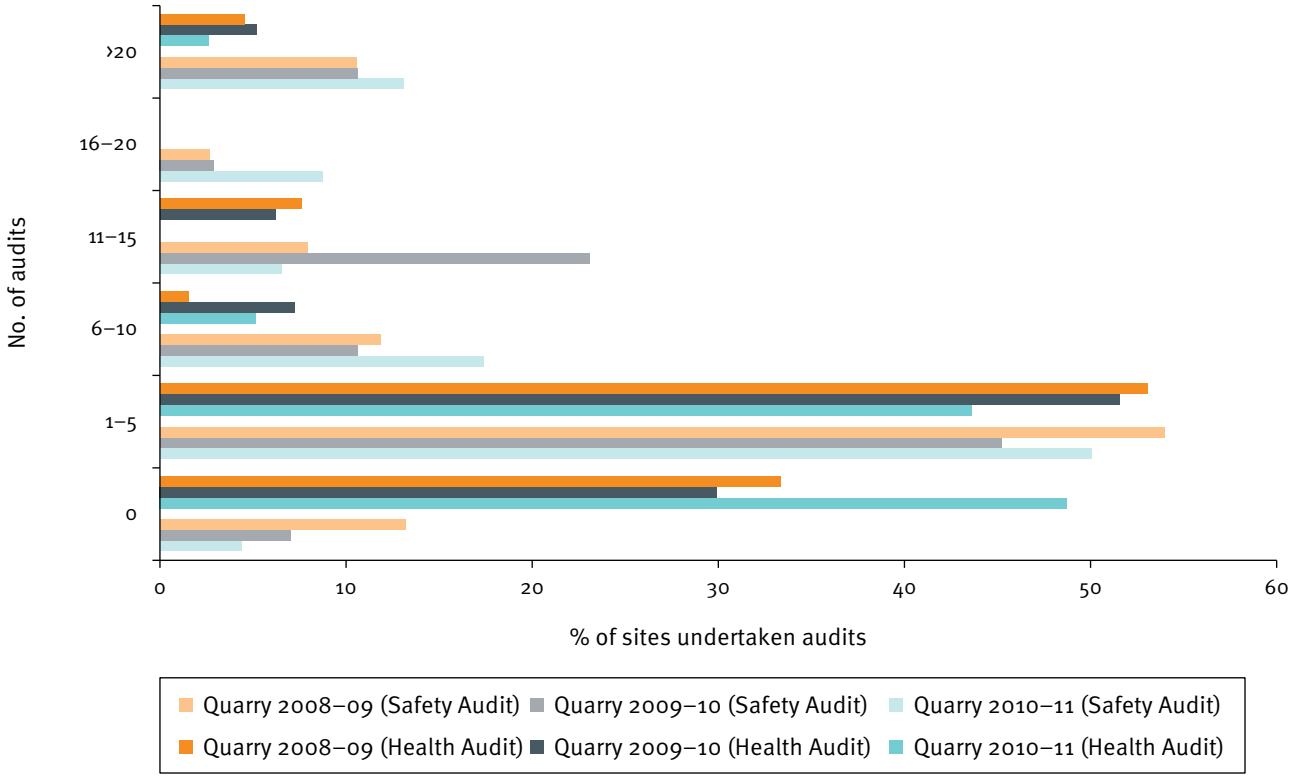


Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2008–11

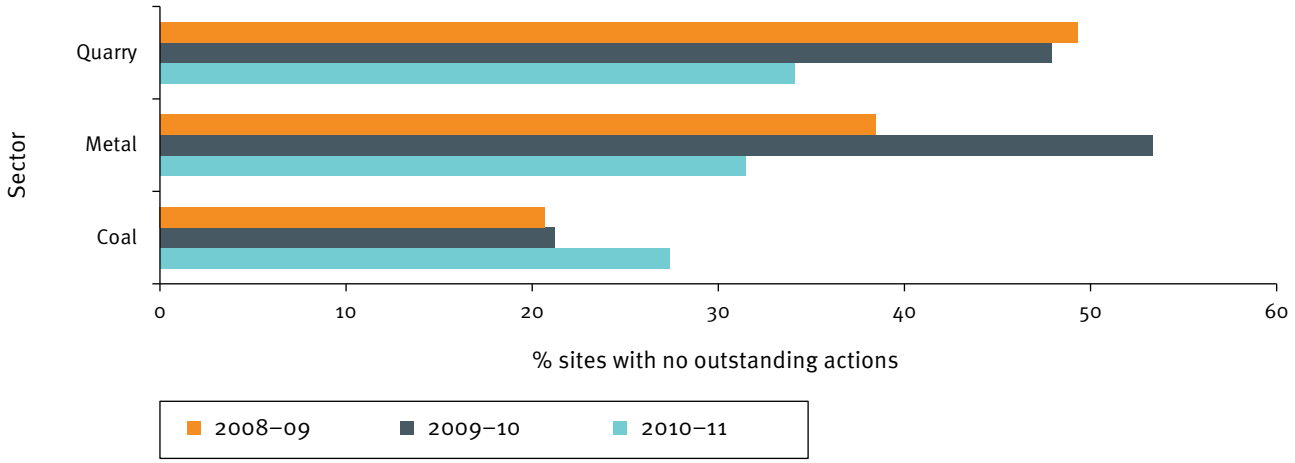


Figure 6.7.1: Coal sector workers involved as auditors in internal audits during the previous 12 months, 2008–11

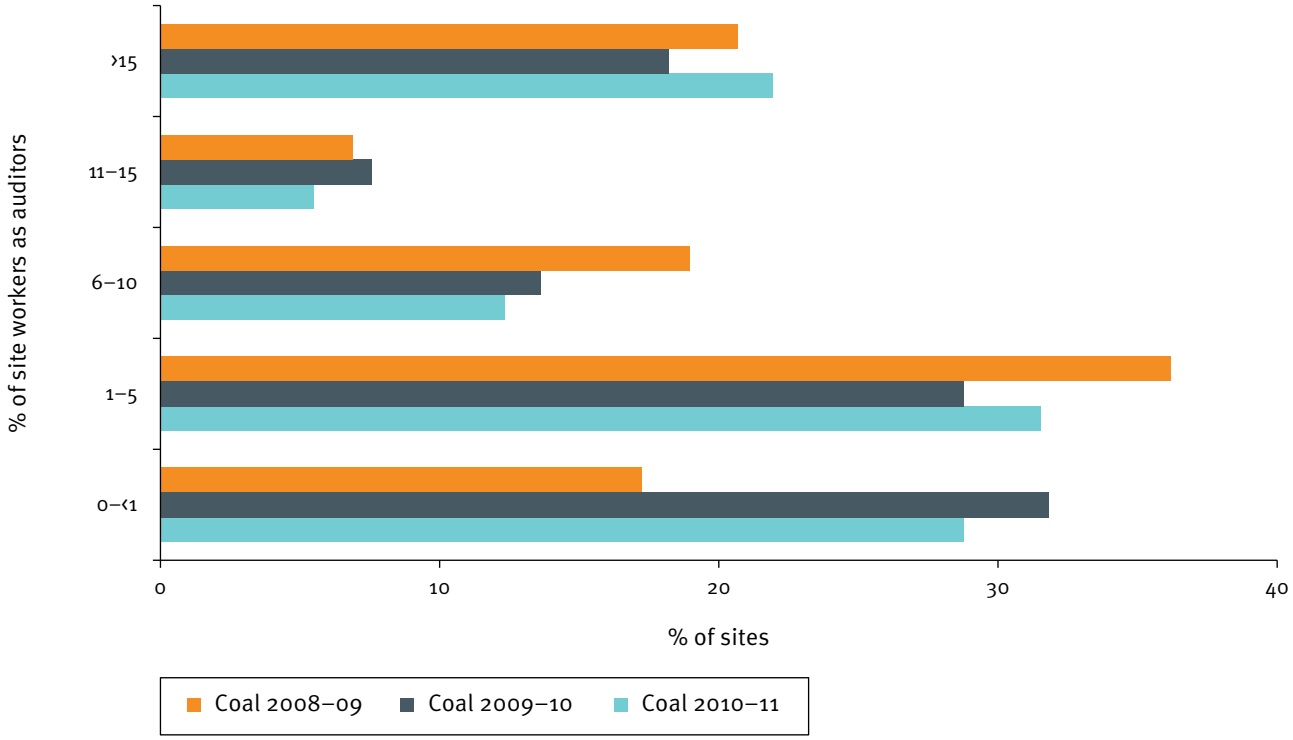


Figure 6.7.2: Metalliferous sector workers involved as auditors in internal audits during the previous 12 months, 2008–11

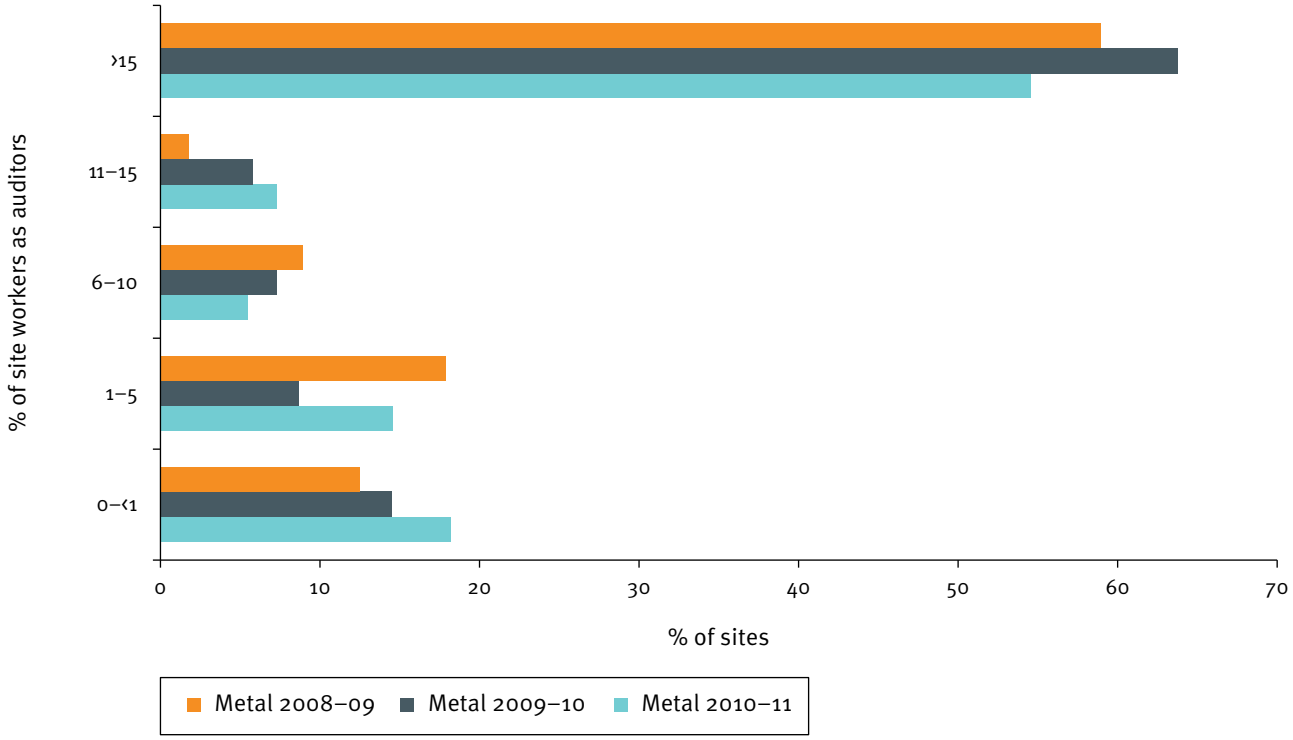


Figure 6.7.3: Quarry sector workers involved as auditors in internal audits during the previous 12 months, 2008–11

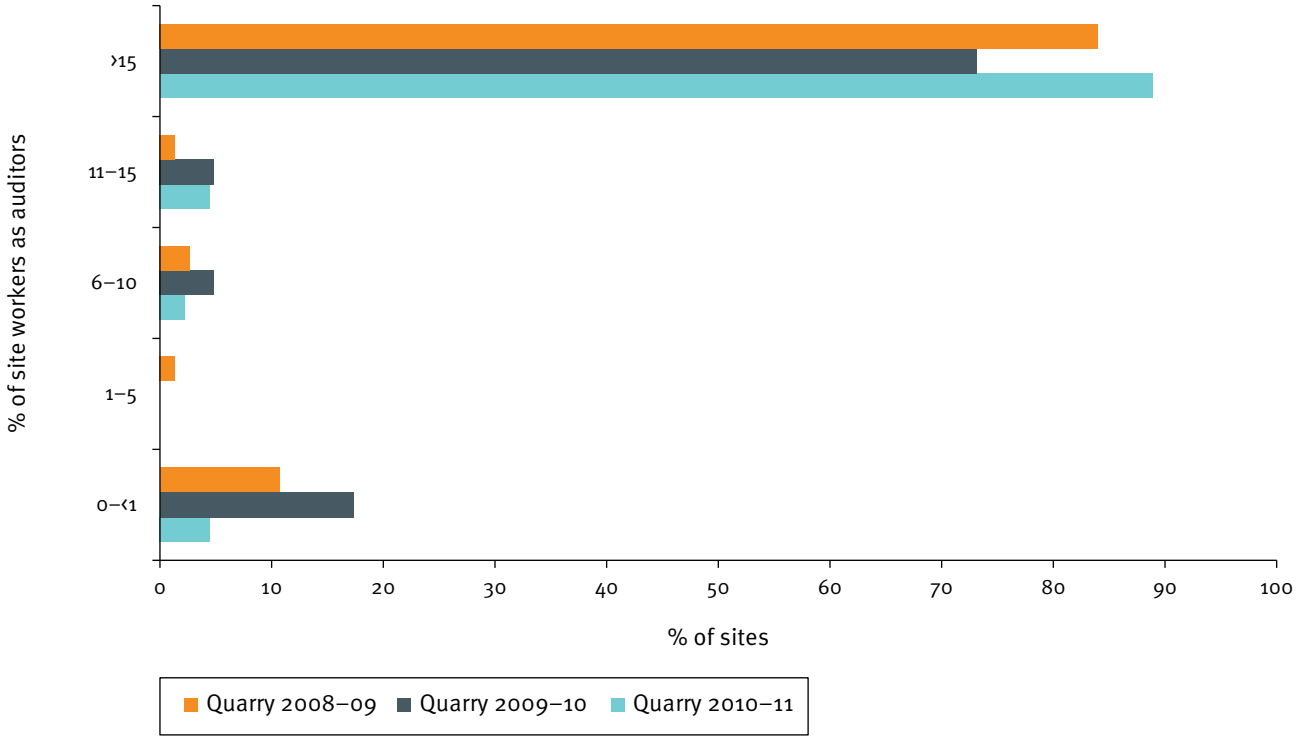


Figure 6.8: Sites with a formal reporting system for capturing and reporting high-potential incidents, 2008–11

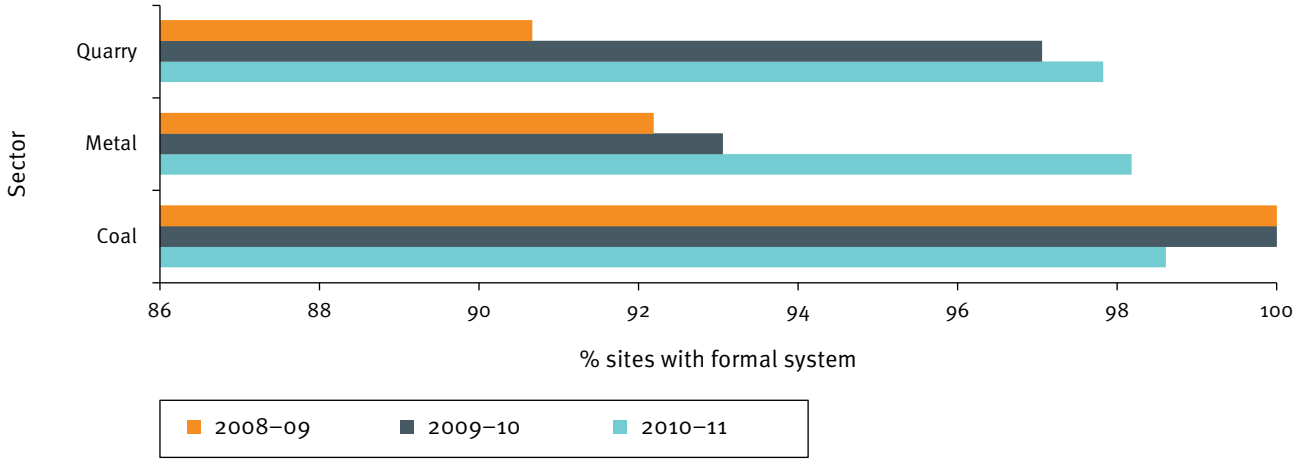


Figure 6.9: Improvement actions resulting from investigations into high-potential incidents, 2008–11

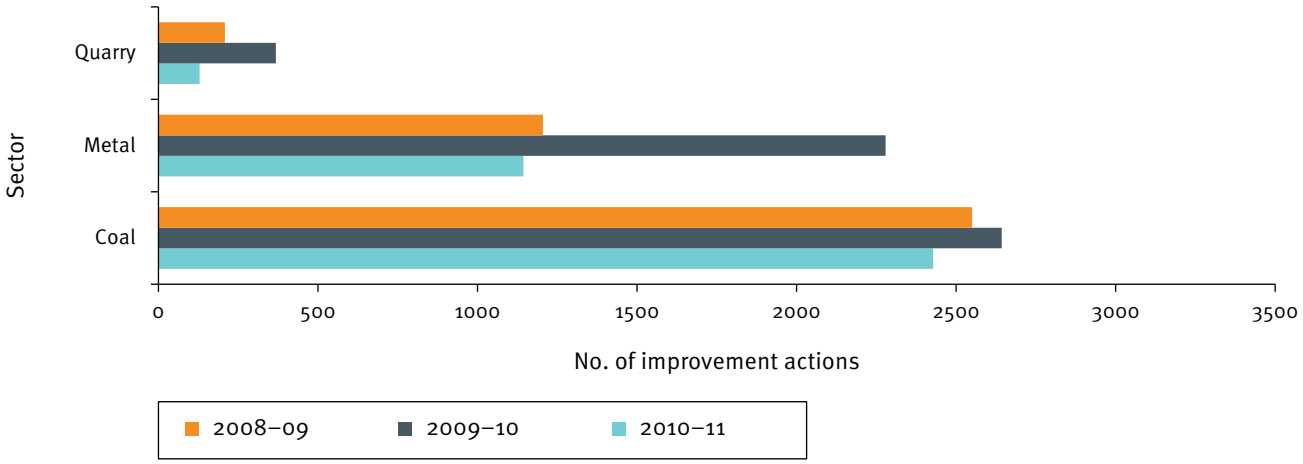
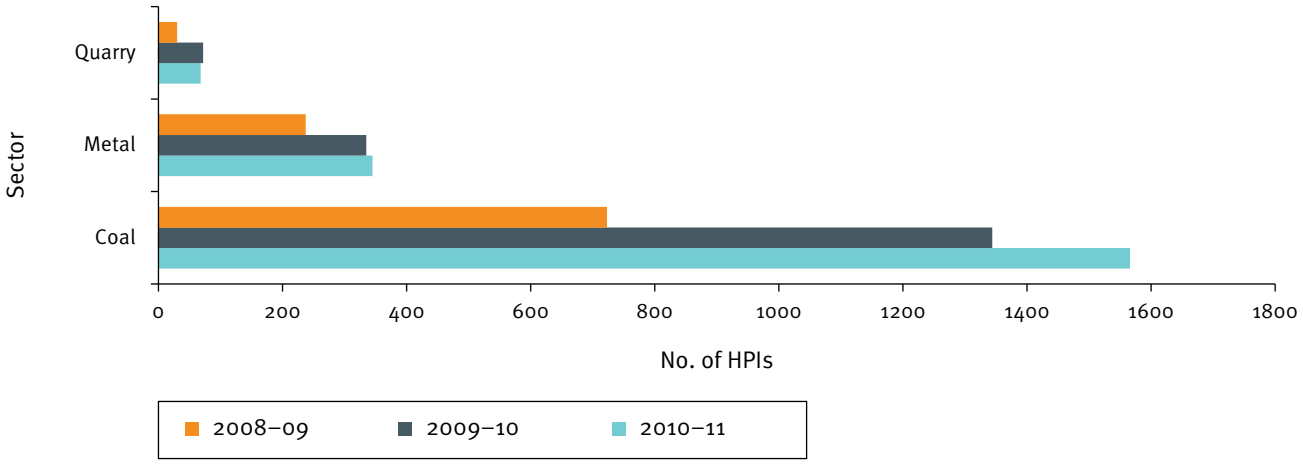


Figure 6.10: Number of high-potential incidents, 2008–11



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 an 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 detailed in Table 7.1.

There are over 95 000 medicals entered into the Coal Mine Workers Health Scheme database. The earliest of these medicals date from 1983. In 2010–11 there were 36 532 medicals received by the department's Health Surveillance Unit. There were 32 568 workers in the coal mining industry as at 30 June 2011, an increase of 5713 workers since 30 June 2010. Based on an estimated attrition rate of 10% it was forecast that approximately 8400 medicals for new workers and 6500 medicals for existing workers (based on the five-yearly medical interval) would be required. Therefore, the total expected number of medicals for 2010–11 was approximately 14 900, leaving 21 620 to be accounted for.

Some of the additional 21 620 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 employees who are not coal mine workers. That 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, which is to assess a person against the job they are doing or going to do.

The Health Surveillance Unit has taken a number of measures to combat these problems, such as creating an interim Health Assessment Form that can be used by doctors when assessing people who are not yet employed in the industry. In addition, medicals received that are clearly for people not yet working in the industry are returned to the medical practice where the assessment took place.

The department is currently investigating automating the health assessment scheme to meet the increasing number of medical records received by the Health Surveillance Unit.

Table 7.1: Health assessments entered into the Coal Mine Workers Health Scheme Database, 2005–11

	2005 –06	2006 –07	2007 –08	2008 –09*	2009 –10	2010 –11
New industry entrants	11 718	10 881	5 324	589	9 668	9 572
Periodic follow-up medicals for existing workers	6 959	5 532	2 770	290	6 807	5 947
Total	**18 677**	**16 413**	**8 094**	**879**	**16 475**	**15 519**
Medicals awaiting entry into the database**	n/a	n/a	10 157	26 633	58 545	60 617

* 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 NMAs not submitting medicals immediately upon completion.

7.2 Coal mine sickness, absenteeism and other lost time statistics

The department compiles statistics on lost time due to sickness, injuries, unauthorised absence and other causes (e.g. annual leave or bereavement leave) based on monthly reports it receives from coal mines. These are shown in Table 7.2.

Table 7.2: Distribution of lost time in coal mines, 2011

	Opencut		Underground	
	Hours	%	Hours	%
Injury/compensation	33 728	2.5	5 052	1.0
Sickness and medical	579 899	43.3	131 863	26.5
Unauthorised absence	43 713	3.3	44 870	9.0
Other	682 618	50.9	316 226	63.5
Total	**1 339 958**	**100.0**	**498 011**	**100.0**
Hours lost per worker		51		80

8. Workers compensation data

The mining industry injury compensation data are sourced from OESR and cover the 2010–11 financial year. The data includes 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 1391 workers compensation claims in the mining industry for 2010–11. The sector breakdown of claims is as follows:

- the coal mining sector incurred 936 claims costing $8.3 million ($8888 per worker)
- the metalliferous sector had 411 claims costing $2.7 million ($6693 per worker)
- the quarry sector had 44 claims costing $301 772 ($6858 per worker).

The number of claims and associated costs for 2010–11 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, 2010–11

Nature of injury		Coal mining	Metalliferous mining	Quarrying	All	Cost per claim
Anxiety/stress disorder	Payment $	539 247	59 031	0	598 278	54 389
	No. of claims	8	3	0	11	
Contusion, bruising and superficial crushing	Payment $	165 835	168 175	3 789	337 799	2 619
	No. of claims	79	45	5	129	
Deafness	Payment $	638 402	138 842	0	777 244	10 094
	No. of claims	60	17	0	77	
Disc—displacement, prolapse, degeneration or hernia	Payment $	98 717	119 723	0	218 440	16 803
	No. of claims	8	5	0	13	
Dislocation	Payment $	114 005	94 621	17 600	226 226	9 836
	No. of claims	14	7	2	23	
Hernia	Payment $	130 768	136 268	0	267 036	10 681
	No. of claims	14	11	0	25	
Laceration or open wound not involving traumatic amputation	Payment $	50 414	165 404	21 426	237 244	2 791
	No. of claims	48	31	6	85	
Other fractures (not elsewhere classified)	Payment $	831 130	297 327	154 366	1 282 823	17 573
	No. of claims	48	22	3	73	
Soft tissue injuries due to trauma or unknown mechanisms (insufficient specific information)	Payment $	48 479	43 219	10 824	102 522	3 943
	No. of claims	18	7	1	26	
Tendonitis	Payment $	141 913	130 309	0	272 222	14 327
	No. of claims	10	9	0	19	
Trauma to joints and ligaments (not elsewhere classified)	Payment $	1 181 433	125 894	1 193	1 308 520	9 551
	No. of claims	108	27	2	137	
Trauma to joints and ligaments (unspecified)	Payment $	538 484	84 116	17 124	639 724	8 530
	No. of claims	54	18	3	75	
Trauma to muscles	Payment $	279 315	13 359	2 182	294 856	3 985
	No. of claims	54	16	4	74	
Trauma to muscles and tendons (not elsewhere classified)	Payment $	1 136 159	143 496	6 850	1 286 505	15 883
	No. of claims	63	17	1	81	
Trauma to muscles and tendons (unspecified)	Payment $	849 407	603 259	36 158	1 488 824	5 242
	No. of claims	161	114	9	284	
Traumatic amputation	Payment $	35 806	162 956	0	198 762	24 845
	No. of claims	4	4	0	8	
Other	Payment $	1 539 775	264 700	30 260	1 834 734	7 310
	No. of claims	185	58	8	251	
Total	**Payment $**	**8 319 291**	**2 750 699**	**301 772**	**11 371 761**	**8 175**
	No. of claims	**936**	**411**	**44**	**1 391**	

Figure 8.1: Workers compensation claims—major injury/illness types, 2006–11

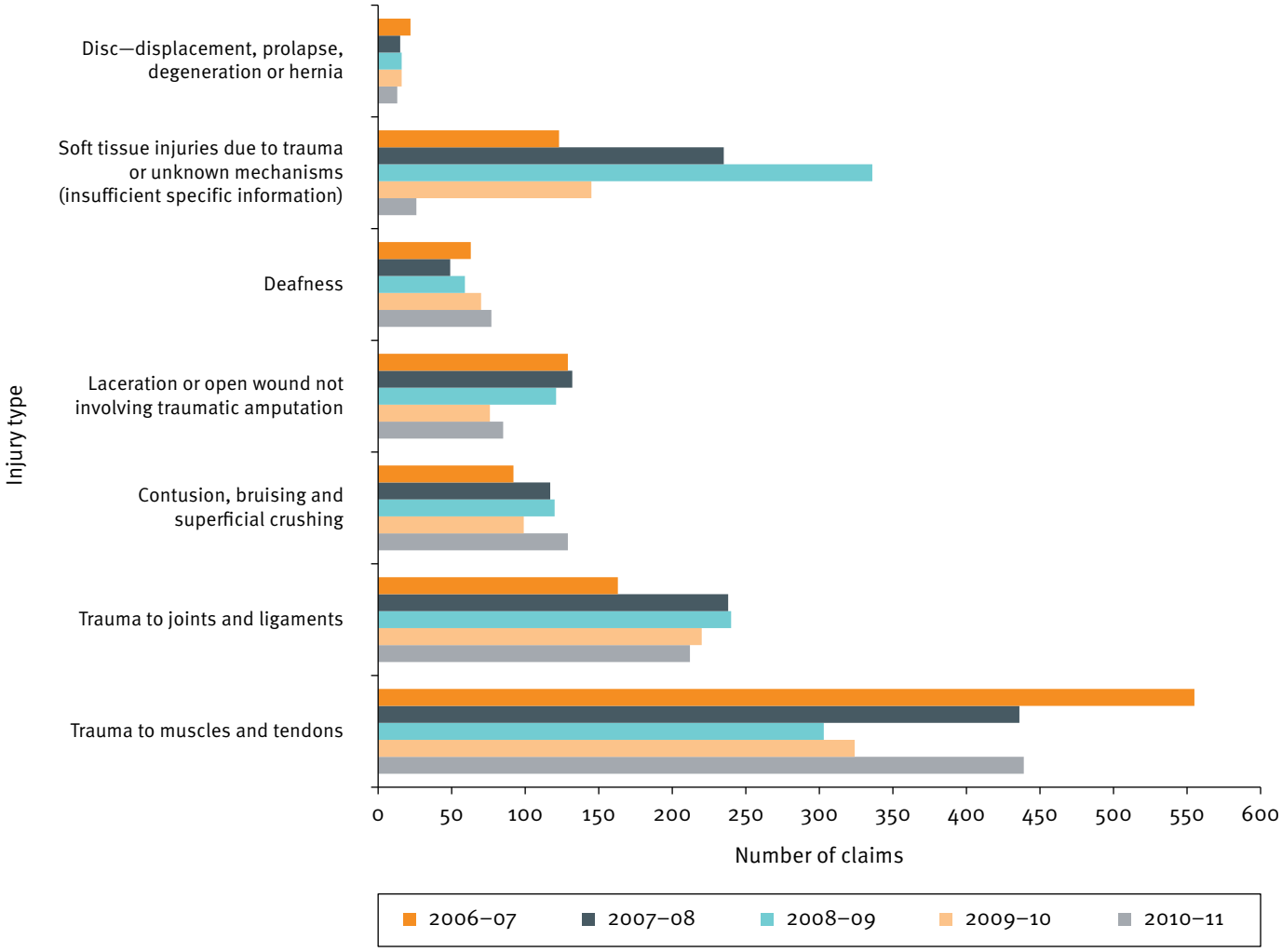
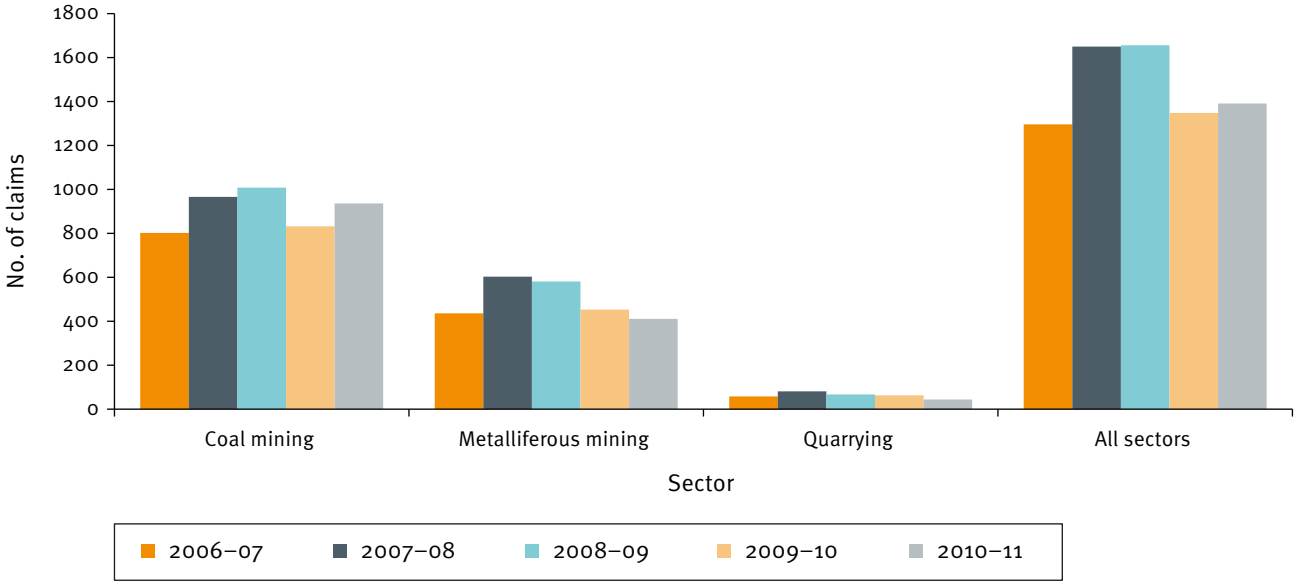


Figure 8.2: Five-year comparison of workers compensation claims per sector, 2006–11



9. Collection of information

Whenever an LTI or HPI occurs, the mine or quarry operator must submit a completed 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. Eighteen consecutive years of injury/disease data for coal and metalliferous mines are now available for analysis.

The report is available on the Department of Employment, Economic Development and Innovation's mining and safety website at www.mines.industry.qld.gov.au

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

Safety and Health
Department of Employment, Economic Development and Innovation
PO Box 15216
City East Qld 4002
Telephone +61 7 3404 3143
minesafetystats@deedi.qld.gov.au

Requests for information during 2010–11 included:

- A mining company requested information on incidents relating to shuttle cars, continuous miners and other mobile plant–coal mine worker interaction, mobile plant to mobile plant interaction and longwall shelf movement–coal mine worker interaction. The information provided was to confirm which scenario resulted in the largest number of HPIs over the last few years. From these scenarios it was to be determined which to target as a trial.
- A Canadian government department requested historical information on the LTIFR in Queensland mines. These statistics were to be used to compare Canada's mining industry with that of other countries.
- Information on the number of accidents/incidents occurring in relation to employees and contractors was requested for presentation at the Coal Mining Contractor Safety Seminar in Mackay.
- A safety and training superintendent at a Queensland mine requested information relating to 'in cab' distractions (for example, two-way radio, commercial radio, insect/debris flying through windows) that have resulted in or contributed to a recordable incident. This information was used in a safety brief to be presented at the mine.
- A departmental officer requested information on the number of employees in the Queensland mining industry. This information was used in the production of maps. These maps are used by other government departments and local councils in planning for housing, roads, and so on.

- A departmental officer requested information on all crane-related incidents from 2005 to 2010. This information was used in producing an inspection report.
- A federal government department requested information on the number and causes of fatalities in Queensland mines.
- A departmental officer requested information on accidents and injuries relating to tyre explosions. This information was used to respond to a media query.
- A departmental officer requested statistics relating to underground metalliferous fires. This information was used in research into reducing underground fires.
- A mining company strategist requested a summary of vehicle-related HPIs in underground metalliferous mines. This information was used to determine suitable proximity-awareness and collision-avoidance systems.
- A safety officer at a mine requested information on LTIs and the time of day that these occurred. This information was used in a research project.
- An officer at an exploration company requested information on surface drill incidents from 2005–2010. This information was used in a research project.
- A safety and compliance administrator at a Queensland coal mine requested historical TRIFR data. These statistics were to be used in determining the mine's safety targets for the upcoming year.
- A federally funded university study received information regarding the number of HPIs and LTIs related to electrical isolation at the longwall face.
- A coal mine requested industry statistics regarding incidents at underground coal mines broken down by hazards and the number of people caught in rotating equipment. The mine was carrying out a semi-quantitive risk assessment for the top 20 risks on its mine site. Mine staff members were to discuss and update their current risk profile on consideration of the information.
- A departmental officer requested information on the causes of fatalities in Queensland mines. This information was presented at a seminar for all mine CEOs. Statistics were provided for 2004–2010 and it was determined that a large proportion of the fatalities were as a result of vehicle interaction.

Access to the Lost Time Accident database

Industry can be provided with selected data from the departmental Lost Time Accident Database, which was 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 these data as a benchmark in the preparation of their safety management systems. The Mines Inspectorate uses the data when planning audit programs.

Interested parties should contact the Mines Inspectorate at their nearest regional 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 4760 7404

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 DEEDI Customer Service Centre on 13 25 23 (within Australia) or +61 7 3404 6999 (outside Australia) with your comments.

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

Department of **Employment, Economic Development and Innovation**
13 25 23
www.deedi.qld.gov.au

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