

# Statistics on Work-Related Musculoskeletal Disorders



2016



**safe work australia**

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# Introduction

Musculoskeletal disorders (MSDs) are a range of conditions that affect joints (arthropathies), spinal vertebrae and intervertebral discs (dorsopathies), the synovium, muscles, tendons and related tissues, soft tissues, and connective tissues. MSDs were identified as priority disorders in the Australian Work Health and Safety Strategy 2012–2022 (the Australian Strategy), which was developed through consultation with governments, industry, unions and the public. Priority disorders were based on the severity of consequences for workers, the number of workers estimated to be affected or the existence of known prevention options. The other priority disorders in the Australian Strategy are mental disorders, cancers (including skin cancer), asthma, contact dermatitis and noise-induced hearing loss.

The aim of the Australian Strategy is to focus attention on priority areas so that causes of workplace injuries, diseases and fatalities can be identified and minimised through appropriate prevention strategies. The statistics in this report highlight the characteristics of work-related MSDs, including their causes and the groups of workers who are at elevated risk of MSDs.

## Source of data

The statistics in this report come from Safe Work Australia's National Data Set for Compensation-Based Statistics (NDS). The NDS is a collection of workers' compensation statistics from each Australian jurisdiction. The primary strength of NDS data is that all cases are work-related and the information that is recorded allows detailed analyses to be undertaken on the circumstances surrounding work-related injuries and diseases. The data also provide a measurable means of comparing the risks faced by different groups of employees and assessing changes in risks over time. Below are the primary limitations of the NDS data in this report:

- Only serious claims are presented. A serious claim is an accepted workers' compensation claim that involves one or more weeks away from work and excludes all fatalities, and all injuries experienced while travelling to or from work or while on a break away from the workplace.
- Work-related injuries and diseases of self-employed workers are under-represented because workers' compensation schemes do not generally cover self-employed workers. Around 10 per cent of Australian workers are self-employed.
- Some workers who are eligible for workers' compensation do not lodge a claim after a work-related injury or disease.
- Diseases are under-represented because many diseases result from long-term exposure to agents or have long latency periods and this makes the link between the work-related disease and the workplace difficult to establish.
- NDS data for 2013–14 are preliminary (denoted by 'p' in tables and figures) and are subject to revision.

## Scope of MSDs

In the NDS, information regarding the injury or diseases is coded using the third edition of the Type of Occurrence Classification System (TOOCS). Cases of MSDs were identified using the TOOCS codes that are used to record the nature of an employee's injury or disease. The table below shows the injuries and diseases that comprise MSDs.

**Table 1: Injuries and diseases in the TOOCS that comprise MSDs**

Nature of injury or disease	Included conditions
Traumatic joint/ligament and muscle/tendon injury (referred to as "MSD injuries" in this report)	Residual soft tissue disorders due to trauma
	Trauma to joints and ligaments
	Trauma to muscles and tendons
Musculoskeletal and connective tissue diseases (referred to as "MSD diseases" in this report)	Diseases involving the synovium and related tissue
	Diseases of the muscle, tendon and related tissue
	Joint diseases (arthropathies) and other articular cartilage diseases
	Spinal vertebrae and intervertebral disc diseases (dorsopathies)

# Workers' compensation data

## Types of work-related MSDs

Over the five-year period between 2009–10 and 2013–14, there were 360 180 serious MSD claims, which equates to 60 per cent of all serious claims for the period. Injuries accounted for 76 per cent of MSD claims, while diseases accounted for 24 per cent. Common types of MSD injuries were soft tissue disorders (29 per cent), trauma to muscles or tendons (21 per cent), and trauma to joints or ligaments (14 per cent).

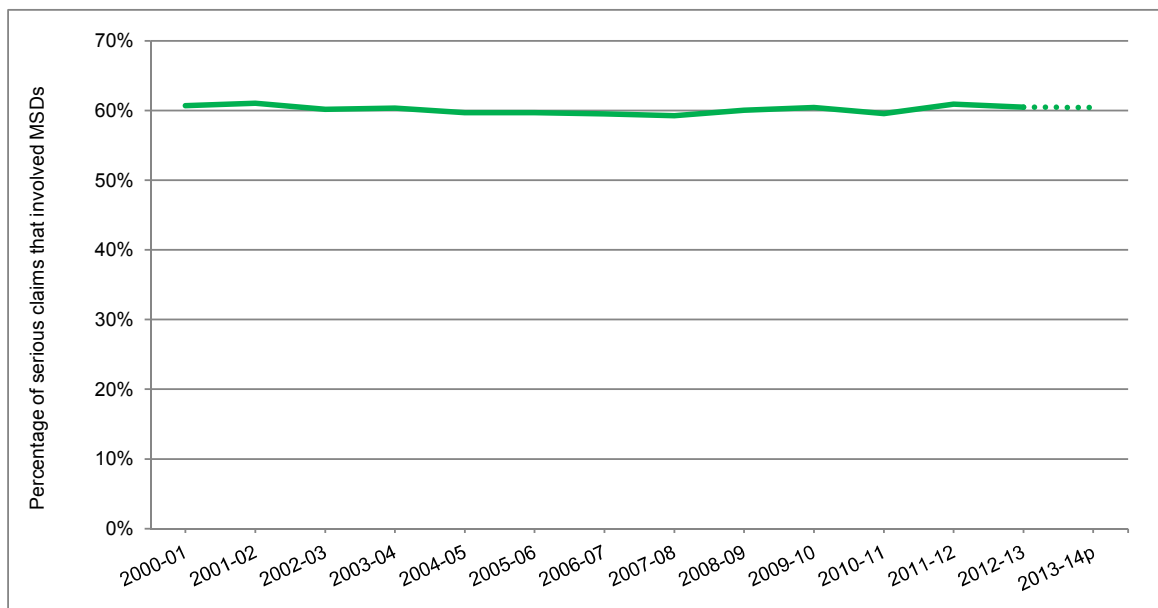
**Table 2: Serious MSD claims by nature of injury or disease, 2009–10 to 2013–14p combined**

Nature of MSD	Number	Percentage
<b>MSD injuries</b>		
Soft tissue disorders due to trauma or unknown mechanisms	102 850	28.6%
Trauma to muscles and tendons	74 170	20.6%
Trauma to joints and ligaments	50 770	14.1%
Trauma to muscles	24 685	6.9%
Dislocation	9 335	2.6%
<b>Total: MSD injuries</b>	<b>272 840</b>	<b>75.8%</b>
<b>MSD diseases</b>		
Back pain, lumbago, and sciatica	23 065	6.4%
Tendinitis	11 810	3.3%
Disc displacement, prolapse, degeneration or hernia	11 140	3.1%
Muscle or tendon strain (non-traumatic)	10 680	3.0%
Occupational overuse syndrome	4 700	1.3%
Bursitis	4 465	1.2%
Epicondylitis	3 765	1.0%
<b>Total: MSD diseases</b>	<b>87 340</b>	<b>24.2%</b>
<b>Total: MSD injuries and diseases</b>	<b>360 180</b>	<b>100.0%</b>

## Magnitude of MSDs over time

Over the 14-year period between 2000–01 and 2013–14, the percentage of serious claims that involved MSDs remained stable at between 59 and 61 per cent.

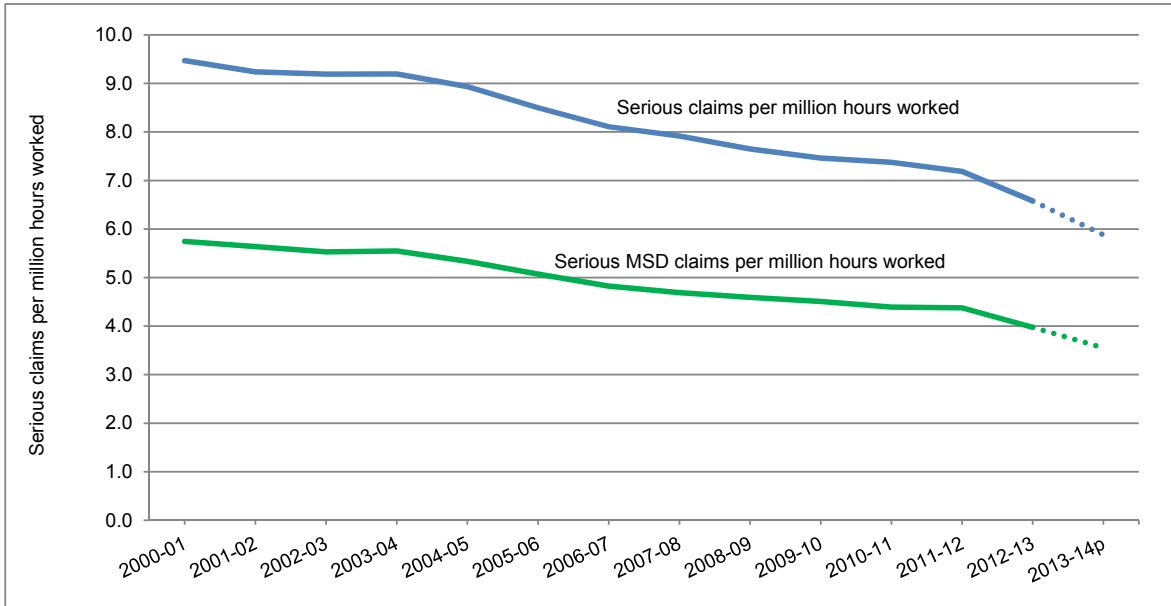
**Figure 1: Percentage of serious claims that involved MSDs, 2000–01 to 2013–14p**



## Trends in frequency rates of MSDs

Between 2000–01 and 2012–13, the frequency rate of serious MSD claims declined by 31 per cent from 5.7 claims per million hours worked to 4.0. Over the same period, the frequency rate for all serious claims also declined by 31 per cent. Data for 2013–14 are preliminary and are excluded when calculating the percentage change over time. Figure 2 shows that the trend for serious MSD claims mirrored the trend for all serious claims. This is unsurprising because the majority of serious claims over the period (between 59 and 61 per cent) involved MSDs.

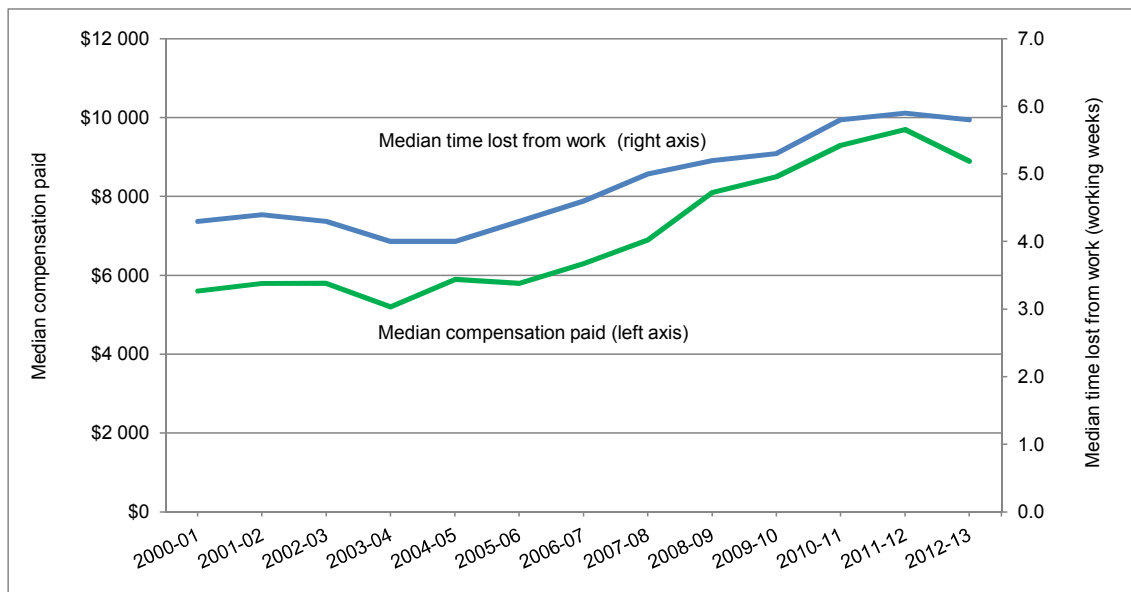
**Figure 2: Frequency rates of serious MSD claims and all serious claims, 2000–01 to 2013–14p**



## Trends in time lost from work and amounts of compensation

Between 2000–01 and 2012–13, the median time lost from work for serious MSD claims increased by 35 per cent from 4.3 working weeks to 5.8. Over the same period, the median time lost for all serious claims increased by 29 per cent. The median amount of compensation for serious MSD claims increased by 59 per cent from \$5 600 in 2000–01 to \$8 900 in 2012–13. Over the same period, the median amount of compensation for all serious claims increased by 71 per cent. Data for 2013–14 are preliminary and are excluded when reporting time lost from work or compensation paid.

**Figure 3: Median time lost from work and median compensation paid for serious MSD claims, 2000–01 to 2012–13**



## Sex and age group

Between 2009–10 and 2013–14, the frequency rate of serious MSD claims was 4.2 claims per million hours worked. There were no notable differences in the frequency rates of female and male employees (4.0 for female employees versus 4.3 for male employees). However, there were notable differences in the frequency rates of different age groups. Table 3 shows that younger employees had lower frequency rates than older employees and this was true for both female and male employees. Frequency rates of serious MSD claims generally increased as age group increased.

**Table 3: Frequency rates of serious MSD claims by age group and sex, 2009–10 to 2013–14p combined**

Age group	Serious MSD claims per million hours worked		
	Female	Male	All employees
15–19 years	2.4	3.3	2.9
20–24 years	2.5	3.6	3.1
25–29 years	2.3	3.4	2.9
30–34 years	2.9	3.7	3.4
35–39 years	3.7	4.2	4.0
40–44 years	4.7	4.6	4.6
45–49 years	5.4	4.8	5.1
50–54 years	5.8	4.9	5.3
55–59 years	5.4	5.0	5.2
60–64 years	5.2	5.4	5.4
<b>Total</b>	<b>4.0</b>	<b>4.3</b>	<b>4.2</b>

## Occupation

Between 2009–10 and 2013–14, labourers accounted for the highest percentage (24 per cent) of serious MSD claims and the occupation also had the highest frequency rate (11.3 claims per million hours worked), which was almost three times higher than the rate for all employees (4.2). Other major occupations that had high frequency rates were community and personal service workers (9.5), and machinery operators and drivers (8.4).

Among community and personal service workers, some subgroups had frequency rates that were more than three times higher than the rate for all employees (4.2). They include health and welfare support workers (15.8), defence force members, fire fighters and police (15.0), and personal carers and assistants (14.7).

**Table 4: Serious MSD claims by occupation, 2009–10 to 2013–14p combined**

Occupation	Number of claims	Percentage of claims	Number of claims per million hours worked
<b>Labourers</b>	<b>85 750</b>	<b>23.8%</b>	<b>11.3</b>
Food process workers	6 180	7.2%	12.0
Cleaners and laundry workers	15 115	17.6%	10.5
Farm, forestry and garden workers	7 150	8.3%	9.6
Construction and mining labourers	10 875	12.7%	8.3
Food preparation assistants	5 175	6.0%	6.1
<b>Community and personal service workers</b>	<b>66 480</b>	<b>18.5%</b>	<b>9.5</b>
Health and welfare support workers	13 225	19.9%	15.8
Defence force members, fire fighters and police	8 805	13.2%	15.0
Personal carers and assistants	22 815	34.3%	14.7
Prison and security officers	5 390	8.1%	9.1

Occupation	Number of claims	Percentage of claims	Number of claims per million hours worked
Hospitality workers	5 405	8.1%	3.7
<b>Machinery operators and drivers</b>	<b>56 920</b>	<b>15.8%</b>	<b>8.4</b>
Storepersons	11 440	20.1%	11.1
Machine operators	5 505	9.7%	10.5
Truck drivers	17 970	31.6%	10.3
Mobile plant operators	8 170	14.4%	6.1
Stationary plant operators	5 935	10.4%	5.2
<b>Technicians and trades workers</b>	<b>57 370</b>	<b>15.9%</b>	<b>4.4</b>
Fabrication engineering trades workers	5 410	9.4%	6.4
Bricklayers, and carpenters and joiners	6 060	10.6%	6.4
Mechanical engineering trades workers	5 745	10.0%	4.1
Food trades workers	5 675	9.9%	4.0
<b>Sales workers</b>	<b>22 185</b>	<b>6.2%</b>	<b>3.3</b>
<b>Professionals</b>	<b>35 595</b>	<b>9.9%</b>	<b>1.7</b>
Midwifery and nursing professionals	11 975	33.7%	6.2
School teachers	7 335	20.6%	2.3
<b>Clerical and administrative workers</b>	<b>20 000</b>	<b>5.6%</b>	<b>1.6</b>
<b>Managers</b>	<b>14 125</b>	<b>3.9%</b>	<b>1.1</b>
<b>Total</b>	<b>360 180</b>	<b>100.0%</b>	<b>4.2</b>

## Occupation and breakdown agency of MSDs

Under the TOOCS, the breakdown agency identifies “the object, substance or circumstance that was principally involved in, or most closely associated with, the point at which things started to go wrong and which ultimately led to the most serious injury or disease” (ASCC 2008). Table 5 outlines the breakdown agencies of MSDs for all occupations and for the four occupations that collectively accounted for almost three-quarters (74 per cent) of serious MSD claims between 2009–10 and 2013–14.

The table shows a number of pronounced occupational differences, which reflect the hazards that are more common in some occupations. The most pronounced occupational difference is that the percentage of serious MSD claims that arose from animal, human and biological agencies was almost three times higher among community and personal service workers (34 per cent versus 12 per cent in all occupations). Almost all (97 per cent) of these claims were attributed to contact with other people and this reflects the high degree of contact that community and personal service workers have with other people.

The percentage of serious MSD claims that arose from mobile plant and transport was more than two times higher among machinery operators and drivers (23 per cent versus 10 per cent in all occupations). Just over half (51 per cent) of these claims were associated with trucks, semi-trailers or lorries, which are more commonly used by machinery operators and drivers than employees in other occupations.



**Table 5: Serious MSD claims by breakdown agency of MSD and occupation, 2009–10 to 2013–14p combined**

Breakdown agency of MSD	Labourers	Community and personal service workers	Technicians and trades workers	Machinery operators and drivers	All occupations
<b>Non-powered handtools, appliances and equipment</b>	<b>30.3%</b>	<b>20.8%</b>	<b>25.2%</b>	<b>29.4%</b>	<b>27.3%</b>
Crates, cartons, boxes, cases, drums, kegs, barrels	22.9%	11.1%	13.1%	36.6%	25.3%
Bags, bundles and bales	7.2%	6.6%	3.2%	5.9%	6.3%
Storage equipment	6.2%	3.7%	5.6%	5.8%	5.6%
Sitting furniture	2.5%	10.6%	2.5%	2.6%	5.4%
Ladders	4.7%	1.4%	14.6%	2.9%	5.1%
<b>Environmental agencies</b>	<b>16.4%</b>	<b>17.2%</b>	<b>17.2%</b>	<b>13.6%</b>	<b>16.8%</b>
Traffic and ground surfaces other	26.9%	26.9%	25.7%	33.7%	26.6%
Steps and stairways	10.9%	13.6%	11.6%	11.6%	13.2%
<b>Materials and substances</b>	<b>15.2%</b>	<b>4.4%</b>	<b>18.6%</b>	<b>13.0%</b>	<b>11.8%</b>
Ferrous and non-ferrous metal	20.0%	5.2%	26.6%	20.1%	18.2%
Sawn or dressed timber	10.9%	3.0%	11.2%	7.3%	8.5%
<b>Animal, human and biological agencies</b>	<b>5.2%</b>	<b>34.1%</b>	<b>3.9%</b>	<b>1.9%</b>	<b>11.5%</b>
Other person	19.7%	94.8%	23.8%	29.4%	77.8%
Condition of affected person	11.9%	1.7%	15.9%	28.4%	5.8%
<b>Mobile plant and transport</b>	<b>8.5%</b>	<b>5.9%</b>	<b>8.4%</b>	<b>22.8%</b>	<b>9.8%</b>
Trucks, semi-trailers, lorries	19.5%	7.2%	18.4%	50.5%	27.6%
Cars, station wagons, vans, utilities	17.6%	46.8%	30.2%	9.2%	23.3%
Trolleys, handcarts	22.5%	20.5%	9.2%	5.2%	13.9%
<b>Powered equipment, tools and appliances</b>	<b>5.0%</b>	<b>2.7%</b>	<b>5.2%</b>	<b>2.0%</b>	<b>4.5%</b>
Computers and keyboards	2.0%	17.9%	6.1%	2.5%	29.2%
Cleaning equipment	44.0%	35.8%	3.4%	6.1%	18.0%
<b>Machinery and (mainly) fixed plant</b>	<b>3.9%</b>	<b>1.0%</b>	<b>6.1%</b>	<b>6.2%</b>	<b>3.6%</b>
Forklift trucks	18.4%	3.1%	7.7%	47.0%	21.9%
<b>Other</b>	<b>15.4%</b>	<b>14.0%</b>	<b>15.4%</b>	<b>11.1%</b>	<b>14.7%</b>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

## Occupation and mechanism of MSDs

Under the TOOCS, the mechanism identifies “the action, exposure or event that best describes the circumstances that resulted in the most serious injury or disease” (ASCC 2008). Work-related MSDs can arise from exposure to a single, primary mechanism or multiple, secondary mechanisms over long periods of time. When workers’ compensation data are coded, only the primary mechanism of each injury or disease is coded and this means that secondary mechanisms are not captured. It is important to consider this limitation when interpreting the statistics on the mechanisms of MSDs because they only reflect the primary mechanisms of MSDs.

Table 6 outlines the mechanisms of MSDs for all occupations and for the four occupations that collectively accounted for almost three-quarters (74 per cent) of serious MSD claims between 2009–10 and 2013–14. Unlike the breakdown agencies of MSDs, there are less pronounced occupational differences in the mechanisms of MSDs. The majority (63 per cent) of serious MSD claims were due to body stressing. Body stressing occurs when muscles, tendons, ligaments or bones are placed under stress and this can arise from a single traumatic event or multiple events over time. Most (79 per cent) body stressing claims resulted from muscular stress while lifting, carrying, putting down or handling objects.

Around a quarter (23 per cent) of serious MSD claims were due to falls, trips or slips of a person. The majority (66 per cent) of these claims were due to falls on the same level, while 24 per cent were due to falls from a height.

**Table 6: Serious MSD claims by mechanism of MSD and occupation, 2009–10 to 2013–14p combined**

Mechanism of MSD	Labourers	Community and personal service workers	Technicians and trades workers	Machinery operators and drivers	All occupations
<b>Body stressing</b>	<b>64.9%</b>	<b>62.0%</b>	<b>63.3%</b>	<b>62.0%</b>	<b>62.9%</b>
Muscular stress while lifting, carrying, or putting down objects	43.0%	31.8%	43.1%	44.8%	40.6%
Muscular stress while handling objects other than lifting, carrying or putting down objects	40.0%	47.0%	37.2%	40.4%	38.7%
Muscular stress with no objects being handled	10.7%	17.7%	13.9%	10.7%	13.9%
Repetitive movement, low muscle loading	6.3%	3.6%	5.9%	4.1%	6.8%
<b>Falls, trips and slips of a person</b>	<b>21.9%</b>	<b>21.2%</b>	<b>24.0%</b>	<b>23.6%</b>	<b>22.9%</b>
Falls on the same level	66.6%	74.6%	57.6%	56.1%	65.9%
Falls from a height	23.9%	17.3%	28.9%	31.9%	24.0%
<b>Being hit by moving objects</b>	<b>5.5%</b>	<b>9.5%</b>	<b>5.1%</b>	<b>5.4%</b>	<b>6.3%</b>
<b>Vehicle incidents and other</b>	<b>5.1%</b>	<b>5.3%</b>	<b>4.5%</b>	<b>6.5%</b>	<b>5.5%</b>
<b>Hitting objects with a part of the body</b>	<b>2.5%</b>	<b>1.9%</b>	<b>3.0%</b>	<b>2.4%</b>	<b>2.3%</b>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

## Industry

Between 2009–10 and 2013–14, the health care and social assistance industry accounted for the highest percentage (18 per cent) of serious MSD claims and the industry also had the highest frequency rate (7.1 claims per million hours worked). Within this industry, the frequency rate for employees in residential care services (15.3) was over three times higher than the rate for all employees (4.2).

Other major industries that had high frequency rates and high percentages of serious MSD claims were transport, postal and warehousing (frequency rate was 7.0 and percentage of MSD claims was 10 per cent), and manufacturing (frequency rate was 5.4 and percentage of MSD claims was 12 per cent).

**Table 7: Serious MSD claims by industry, 2009–10 to 2013–14p combined**

Industry	Number of claims	Percentage of claims	Number of claims per million hours worked
<b>Health care and social assistance</b>	<b>65 995</b>	<b>18.3%</b>	<b>7.1</b>
Residential care services	22 385	33.9%	15.3
Hospitals	25 695	38.9%	8.5
Child care services	3 875	5.9%	5.3
<b>Transport, postal and warehousing</b>	<b>34 065</b>	<b>9.5%</b>	<b>7.0</b>
Warehousing and storage services	4 105	12.0%	10.1
Road freight transport	11 925	35.0%	8.9
Postal and courier pick-up and delivery services	3 985	11.7%	4.5
<b>Manufacturing</b>	<b>44 645</b>	<b>12.4%</b>	<b>5.4</b>
Structural metal product manufacturing	3 085	6.9%	13.6
Meat and meat product manufacturing	5 785	13.0%	11.8
Motor vehicle and motor vehicle part manufacturing	2 475	5.5%	5.3

Industry	Number of claims	Percentage of claims	Number of claims per million hours worked
Agriculture, forestry and fishing	8 960	2.5%	5.0
Administrative and support services	16 550	4.6%	4.9
Public administration and safety	29 165	8.1%	4.8
Construction	33 710	9.4%	4.6
Wholesale trade	16 595	4.6%	4.6
Arts and recreation services	5 935	1.6%	4.6
Retail trade	32 000	8.9%	3.9
Accommodation and food services	16 610	4.6%	3.4
Mining	8 615	2.4%	3.4
Other services	9 840	2.7%	3.1
Electricity, gas, water and waste services	4 115	1.1%	3.1
Education and training	18 860	5.2%	2.7
Rental, hiring and real estate services	3 330	0.9%	2.1
Information media and telecommunications	2 090	0.6%	1.2
Professional, scientific and technical services	5 535	1.5%	0.8
Financial and insurance services	2 550	0.7%	0.7
<b>Total</b>	<b>360 180</b>	<b>100.0%</b>	<b>4.2</b>

## Bodily location of MSDs

Around one in three (35 per cent) serious MSD claims between 2009–10 and 2013–14 involved the back. This bodily location was involved in a higher percentage of MSD diseases (43 per cent) and a lower percentage of MSD injuries (33 per cent). Other bodily locations that were commonly involved in serious MSD claims were the shoulder (16 per cent), the knee (13 per cent) and the ankle (6 per cent).

**Table 8: Serious MSD claims by bodily location of MSD and nature of MSD, 2009–10 to 2013–14p combined**

Bodily location of MSD	MSD injuries	MSD diseases	All MSDs
Back	32.5%	43.3%	35.1%
Shoulder	15.2%	18.8%	16.1%
Knee	14.6%	8.7%	13.2%
Ankle	7.5%	1.2%	6.0%
Wrist	4.0%	5.5%	4.3%
Hand, fingers and thumb	3.3%	3.4%	3.3%
Neck	2.7%	4.5%	3.2%
Elbow	1.9%	6.0%	2.9%
Foot and toes	1.7%	1.3%	1.6%
Neck and shoulder	1.6%	0.7%	1.4%
Lower leg	1.7%	0.5%	1.4%
Other	13.3%	6.2%	11.6%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

# Further information

## Explanatory notes

Explanatory notes for the NDS are available on the following website: <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/explanatory-notes-datasets>

## References

Australian Safety and Compensation Council (ASCC) 2008. Type of Occurrence Classification System, Third Edition, Revision One. Canberra: ASCC. Accessed on 2 September 2014: <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/sr20080501toocs3rdeditionrevision>

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