



**Trade &
Investment**
Mine Safety

A survey to measure awareness of, and beliefs surrounding, the causes and prevention of musculoskeletal disorders (MSDs) among NSW mining employees



October 2013

A paper-based survey of 1316 NSW mining employees
conducted on behalf of NSW Mine Safety



ACKNOWLEDGEMENTS

This survey was conducted by Jetty Research, Coffs Harbour, on behalf of NSW Trade & Investment Mine Safety.

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We sincerely thank the NSW mines and quarries who participated in this survey.

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EXECUTIVE SUMMARY

In mid-2012, the Industry Assistance Unit (IAU) within NSW Trade & Investment Mine Safety commissioned a survey designed to measure awareness of, and beliefs surrounding the causes and prevention of musculoskeletal disorders (MSDs) among NSW mining employees. The study was also designed to provide baseline data for possible longitudinal comparison in coming years.

A two-page survey questionnaire (see Appendix 1) was devised by the IAU, Jetty Research and advertising and research consultant Cat.Dog. The bulk of questions constituted 12 forced-choice pairings using an 11-point (1-10) Likert scale, and relating to respondents' beliefs and understanding of MSD causes, prevention and management.

The survey was conducted between May and September 2012, largely in conjunction with mine site visits by the IAU. In all, 1316 valid surveys were completed and returned by mining employees across 19 different sites and a range of different industries/mine types.

Based on a survey population of 31,185 mining employees in NSW¹, random sampling error for a survey of 1316 respondents is +/- 2.6 per cent at the 95 cent confidence level. Assuming a random sample, this suggests (effectively) that there is a 95 per cent chance that results mirror those for the survey population as a whole to within +/- 2.6 per cent. (See "Sampling error", page 12, for details and qualifications.)

Among the survey's major conclusions:

1. Awareness of MSDs was poor, with only 22% of respondents claiming to be "very" or "quite" aware of the term. As one would expect, awareness rose with age and experience. Of those with some awareness, the largest proportion had heard about the term at work (34%) or from a healthcare professional (21%).
2. In relation to the 12 paired statement questions², respondents generally showed a high level of interest and responsibility in the area of identifying and reporting manual tasks designed to minimise MSDs. The knowledge-based questions varied widely from poor to good, while there was only limited agreement that hazards have been reported or that changes have already been made. Likewise there was only moderate confidence that reporting a manual task would see action taken by management.
3. Knowledge of, and interest in MSD-related issues were generally highest among the youngest (<35 years old) and/or least experienced (< 3 years) employees. Conversely, the oldest (45-plus) and most experienced (>10 years) mine workers were most likely to have potentially outdated beliefs regarding the potential causes of MSDs (for example, that MSDs almost always occur from a one-off event or accident, that they cannot be caused simply by an awkward sitting posture, or that they cannot be caused by machinery vibration).
4. Younger employees were also more confident than older colleagues in their ability to identify hazardous tasks within the workplace.

¹ ABS Census, 2011: Usual resident profile

² See summary graph, page 37

5. Despite points 3 and 4, above, older and more experienced workers were significantly more likely than their younger/less experience counterparts to have reported perceived hazards. (While this may be simply due to the fact that they had had more opportunity to do so, it may also suggest a greater confidence in raising such issues arising from factors such as experience, status or attitude.)
6. It also appears that the oldest and more experienced categories of employees have the least amount of confidence that reporting a manual task hazard will see something done about it. While this may just be age or experience-related scepticism, it is a concern given this same age/experience arguably gives these mine workers a greater ability to identify hazards in the first place.
7. Almost half the sample (45%) had not seen or heard about MSDs from any work source. Of those who had, the most widely recalled sources (from a prompted list) were induction, WHS or participatory ergonomics (PE) workshops (33%), and on-site posters or advertising (19%).
8. While cross-industry comparisons revealed a number of significant differences (see questions 3, 9, 11, 12 and 13) there were no definitive patterns as to which sector had the most favourable or unfavourable track record in relation to understanding of, or interest in MSDs.

Subject to further study, and longitudinal comparisons against existing data, this survey would seem to suggest that older and/or more experienced mine workers are at greatest danger of contracting MSDs from “non-traditional” causes. While their younger/less experienced colleagues have more up-to-date information on MSD causes- and greater confidence in their ability to identify such hazards – they are (paradoxically) the least likely to report potential MSD issues to management.

INTRODUCTION

BACKGROUND

The survey was commissioned to better understand awareness, knowledge, and interest relating to workplace-related musculoskeletal disorders (MSDs). The statewide survey followed a pilot survey of 270 mine employees at the Cadia East underground gold mine in central west NSW, conducted in March 2012 and designed to test the methodology and questions.

The survey was designed to provide baseline data for a possible longitudinal (i.e. time-based) study of NSW mining employees, to see how - and to what extent - knowledge and attitudes change based on proposed educative measures.

METHODOLOGY

The survey was termed a “NSW Mine Employee WHS³ survey” to avoid response bias.

The preferred approach avoided simple agree/disagree scales, in favour of 12 forced choice pairs using a simple 11-point (i.e. 0-10) Likert Scale. This was designed to minimise social desirability and other forms of response bias – i.e. from participants unwilling to admit they didn’t already have high levels of knowledge and/or were “doing the right thing”.

Additional questions sought information on awareness of MSDs, sources of existing information, and demographic data for cross-tabulation purposes. Demographic profiling was limited to age and mine experience, to minimise completion time and ensure respondent confidentiality.

The survey was designed to take respondents approximately five minutes, allowing mine employees to complete it easily ahead of commencement of their shift. The IAU reports that actual survey time ranged from three to eight minutes.

See Appendix 1 for a copy of the final questionnaire.

The survey was conducted from May to September 2012, largely in conjunction with mine site visits by Kylie Newton (Practice Leader, Health and Human Factors, NSW Mine Safety). See Table (i), on the following page, for a summary of methodology and survey numbers by site.

No incentive was offered for survey completion.

In all 1334 surveys were returned. No employee refused to complete a survey form. Of these, 1316 were classed as valid. The balance were either left blank, or had provided the same response to all scale questions and hence been deemed invalid.

³ Work Health and Safety

BREAKDOWN OF SURVEY SAMPLE BY MINE SITE, INDUSTRY, AREA AND METHOD OF ADMINISTRATION

Mine site	Industry	Area	Number of valid surveys	How survey was administered
NRE	Coal	Illawarra/Southern	55	Distributed and collected by employer
Charbon	Coal	South western	57	Distributed and collected by IAU
Tahmoor	Coal	Illawarra/Southern	149	Distributed and collected by IAU
ULAN	Coal	Central West	181	Distributed and collected by employer
CSA	Metalliferrous	Central West	92	Distributed and collected by IAU
CADIA East	Metalliferrous	Central West	270	Distributed and collected by IAU
No company provided	Extractive	Hunter/Northern	28	Distributed and collected by IAU
No company provided	Metalliferrous	Central West	47	Distributed and collected by IAU
No company provided	Coal	Hunter/Northern	15	Distributed and collected by IAU
Mt Thorley	Coal	Hunter/Northern	33	Distributed and collected by IAU
Mt Arthur	Coal	Hunter/Northern	44	Distributed and collected by IAU
Integra	Coal	Hunter/Northern	131	Distributed and collected by IAU
No company provided	Extractive	Illawarra/Southern	9	Distributed and collected by employer
No company provided	Extractive	Illawarra/Southern	33	Distributed and collected by IAU
No company provided	Coal	South western	12	Distributed and collected by IAU
No company provided	Extractive	Hunter/Northern	19	Distributed and collected by IAU
No company provided	Coal	Illawarra/Southern	84	Distributed and collected by IAU
No company provided	Extractive	Illawarra/Southern	20	Distributed and collected by IAU
No company provided	Extractive	North Coast	37	Distributed and collected by IAU
Total			1316	

Table i

Data entry was conducted by Jetty Research, using the statistical database program SPSS. An audit was then conducted whereby every 10th record was checked for data accuracy.

Please note that due to the nature and methodology of the survey, not all respondents answered every question. The number of respondents answering each question is marked as “n = XXX” in the graph accompanying that question.

To improve flow and/or clarity of findings, question order in this report does not always follow that of the survey itself. If in any doubt as to actual question order, see Appendix 1.

Where differences in this report are classed as significant, this implies they are statistically significant based on independent sample t-scores or other analysis of variation (ANOVA) calculations. In statistical terms, significant differences are unlikely to have been caused by chance alone.

Unless specified otherwise, significant differences are highlighted in:

- blue (above mean)
- pink (below mean)

DIFFERENCES BETWEEN PILOT AND STATEWIDE SURVEYS

The statewide survey was identical to the Cadia East pilot survey except for the following:

- Title and introduction changed to reflect different target populations
- Q11 wording, commencing “I have already/have not yet reported any hazardous manual tasks to the...” changed from “participatory ergonomics (PE) team” (CADIA East) to “supervisor or OH&S committee” (statewide survey)
- Q16 (Experience category) expanded from 1-5 years (Cadia East pilot) to “1-2 years” and “3-5 years”

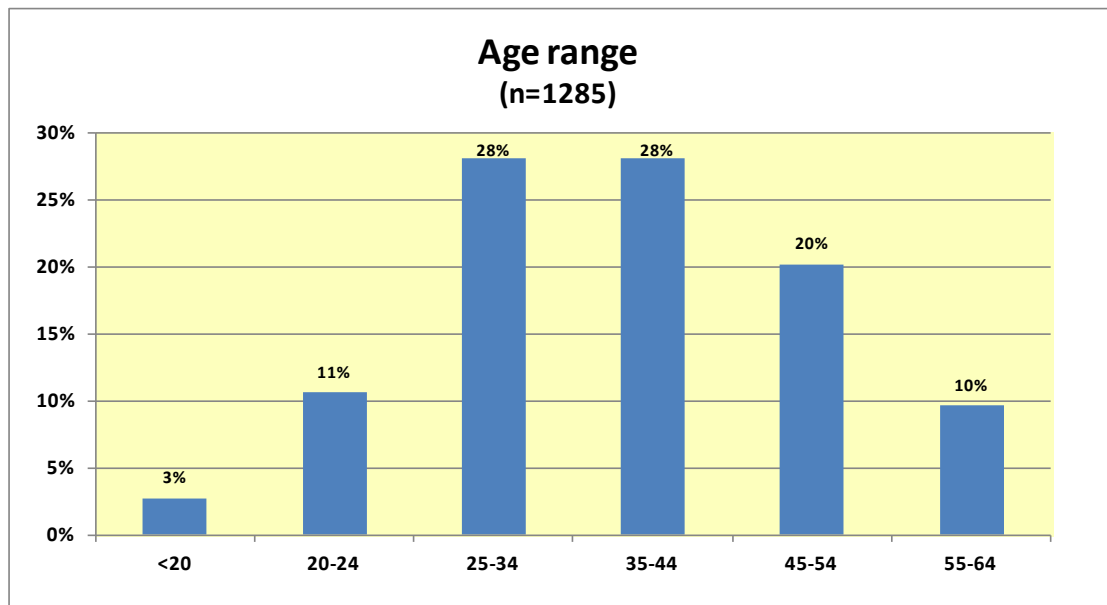
As a result of the changes being so minor, and given that the statewide survey followed within two months of the pilot, a decision was made to include the Cadia East sample within the statewide sample.

Regarding the change to Q16, and in order to allow direct comparison of results, a decision was made to randomly allocate “1-2 year” or “3-5 year” characteristics to the relevant Cadia East respondents, in the same proportion as encountered during the statewide survey.

SAMPLE CHARACTERISTICS

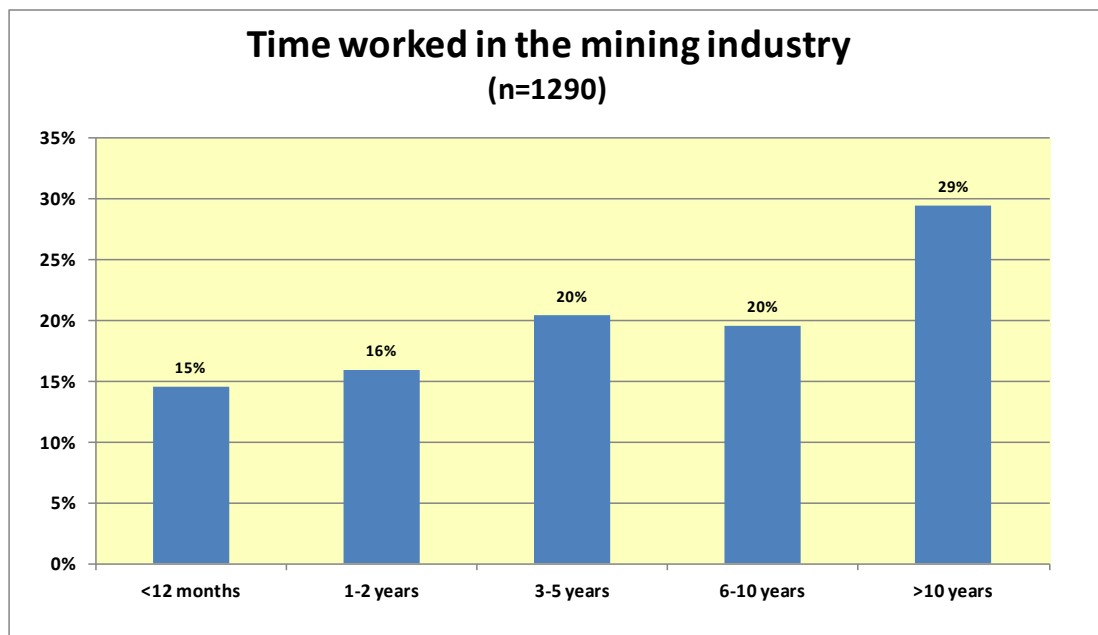
As noted previously, demographic questions were limited to age and mining industry experience. The following is a breakdown of the sample by each of these characteristics:

Age range



Graph i

Time worked in the mining industry



Graph ii

For the purposes of evaluating survey data by age and experience, respondents were divided into one of three age brackets (18-34, 35-44 and 45-plus) and three mining experience levels (less than three years, 3-10 years and more than 10 years).

Survey sample by age and years of mining experience

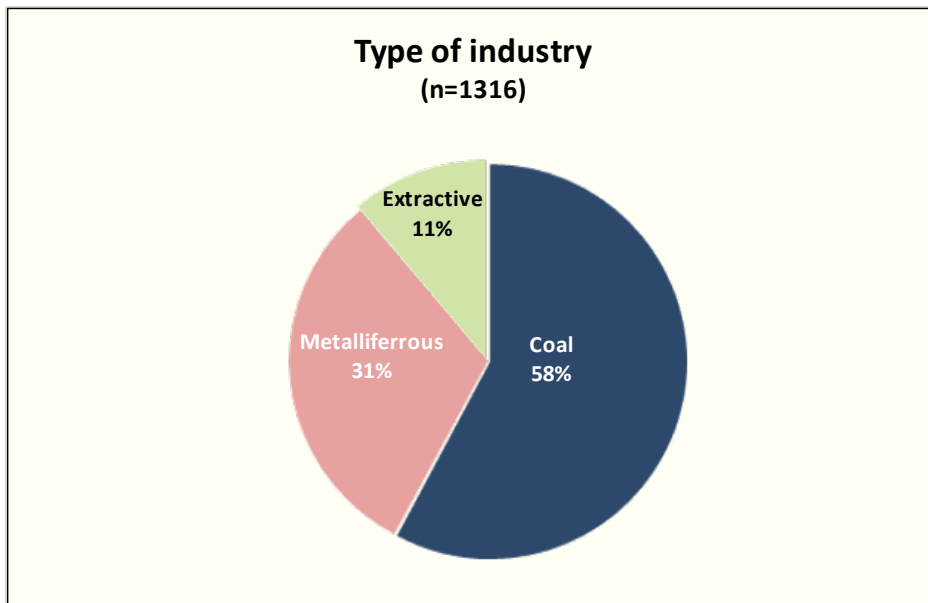
Experience	Age x 3			Total
	18-34	35-44	45+	
< 3 years	241 45.3%	106 29.4%	45 11.5%	392 30.5%
3-10 years	265 49.8%	169 46.8%	82 20.9%	516 40.2%
More than 10 years	26 4.9%	86 23.8%	265 67.6%	377 29.3%
Total	532 100.0%	361 100.0%	392 100.0%	1285 100.0%

Table ii

(Note: 31 respondents chose not to answer the age and/or experience questions)

As expected, there was a strong and direct correlation between age and experience.

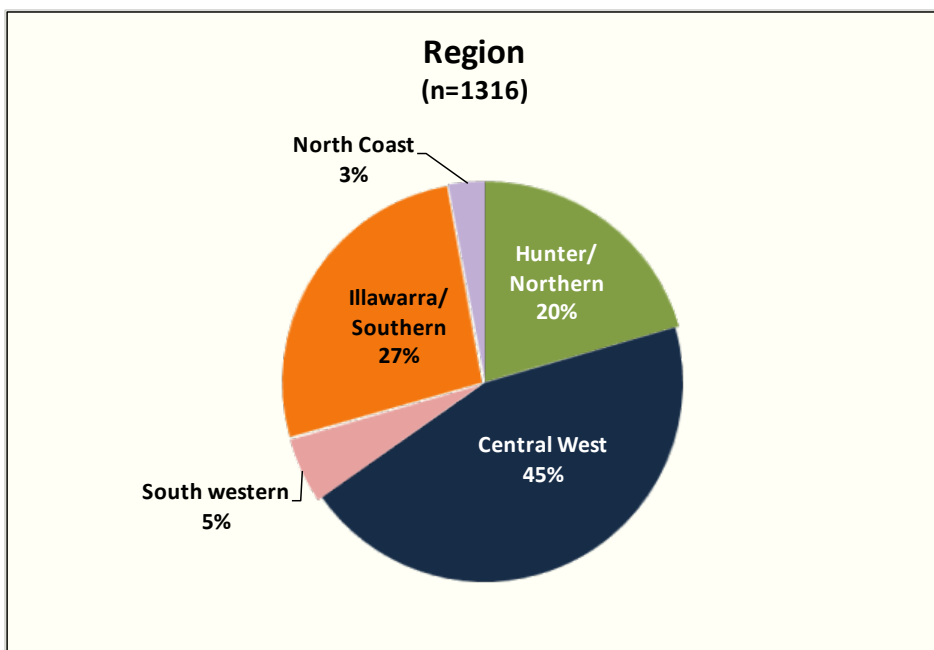
Survey sample by industry



Graph iii

Graph iii, above, shows the breakdown of the sample by industry type. It indicates that the sample was skewed to the coal industry, constituting 58% of respondents. A further 31% worked in metalliferrous industries, with the balance from the extractive sector (e.g. gravel quarries).

Survey sample by region



Graph iv

Meanwhile the survey's geographic diversity is highlighted in Graph iv, showing that the sample was derived from six different regions of NSW. However the bulk of these were from (in descending order) the Central west, Illawarra/southern and Hunter/Northern regions.

SAMPLING ERROR

According to the latest Australian Bureau of Statistics (ABS) census, as at August 2011 there were 31,185 people employed within the mining industry in NSW.

A random sample of 1316 respondents within a total survey population of 31,185 equates to a random sampling error (RSE) of approximately +/- 2.6% at the 95% confidence level. This means, in effect, that were we to conduct the same survey 20 times using different samples of mining employees, results should represent the views and behaviours of the entire survey population – in this case all NSW-based mining employees - to within +/- 2.6% in 19 of those 20 surveys.

This assumes, of course, that the sample is indeed random. It needs to be acknowledged that the sample is derived solely from employers that provided NSW Trade & Investment with access to their employees, and/or which showed an interest in the MSD survey project.

Results may also be subject to various forms of non-random sampling error. These may include factors such as non-response, data entry error or question bias.

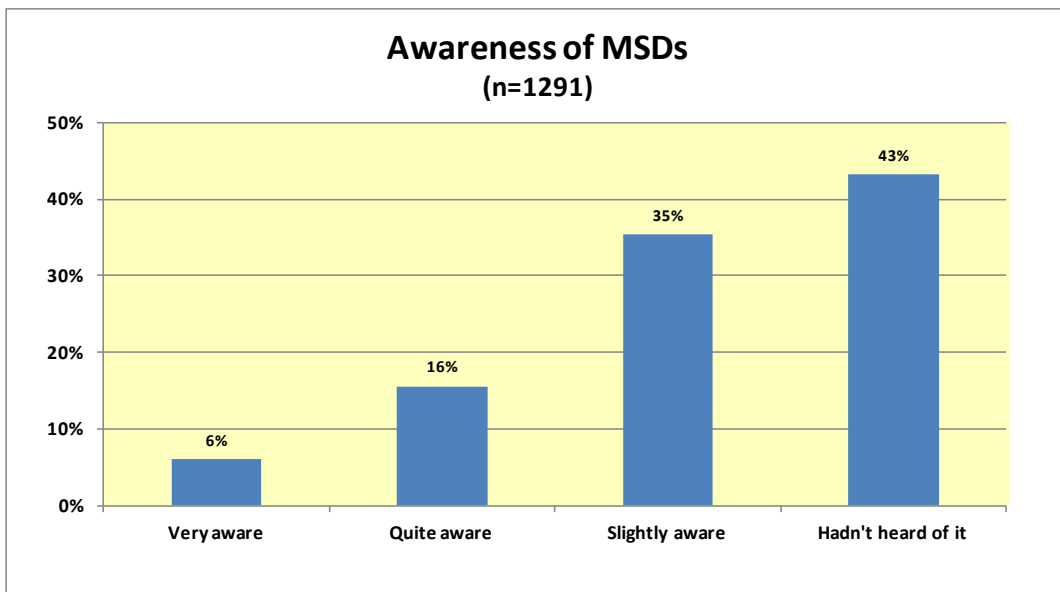
Every effort has been made through the question creation and methodology phases of this project to minimise such non-random sampling error. Based on the robust sample size and commensurately low RSE, we are confident that that following results are broadly representative of the survey population.

PART A: AWARENESS OF MSDS

The survey began with two questions designed to measure awareness of MSDs among employees:

- How aware are you of the term musculoskeletal disorders, or MSDs
- Where have you heard about MSDs

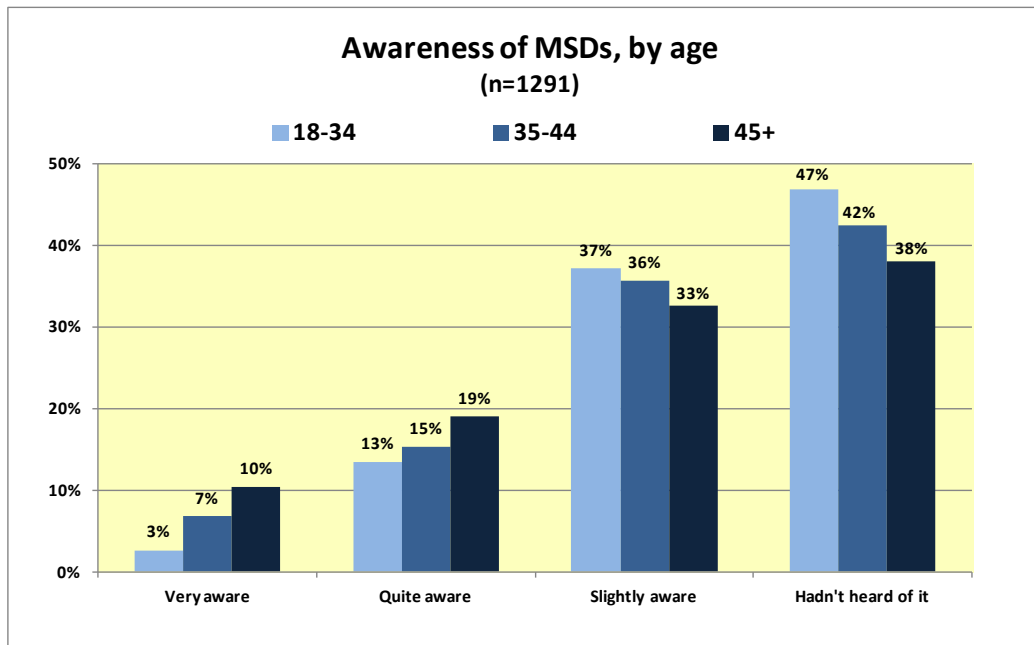
AWARENESS OF MSDS



Graph A1:

Awareness of MSDs was generally poor, with only 22% of the survey sample classing themselves as “very” or “quite” aware. A further 35% claimed to be “slightly aware”, while over 40% were willing to admit they hadn’t heard of MSDs prior to this survey.

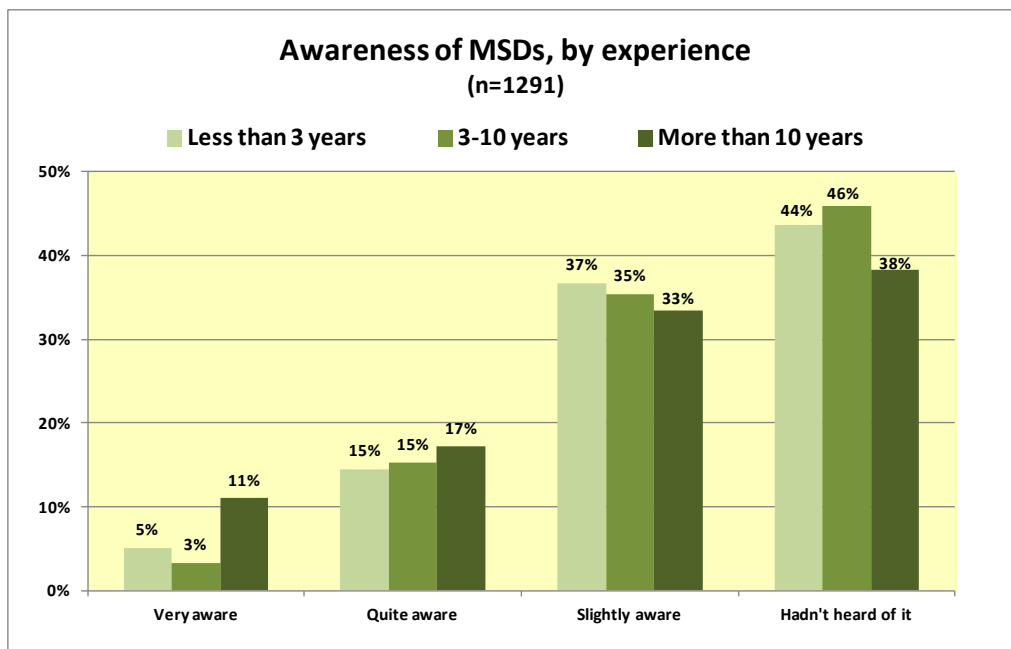
Awareness by age



Graph A2.1

As expected, awareness of MSDs rose significantly with age. Some 29% of those aged 45-plus claimed to be very or quite aware, against just 16% of those aged 18-34.

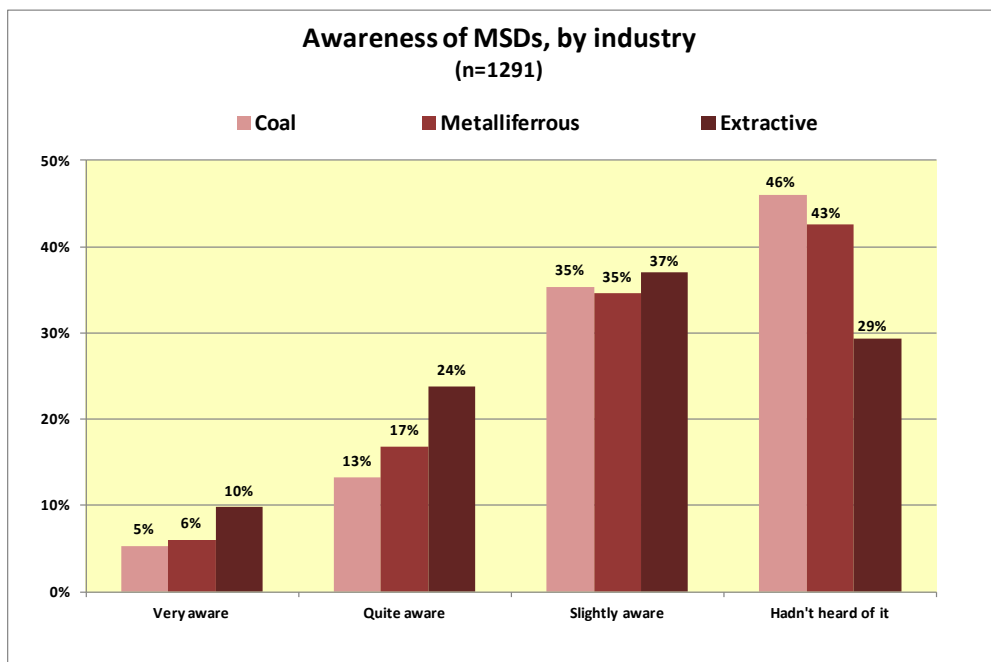
Awareness by experience



Graph A2.2

Likewise, there appears to be a correlation between MSD awareness and experience in the mining industry. Of those working in the sector for more than 10 years, 28% claimed to be very or quite aware. This compares with 20% of those with less than three years' experience.

Awareness by industry



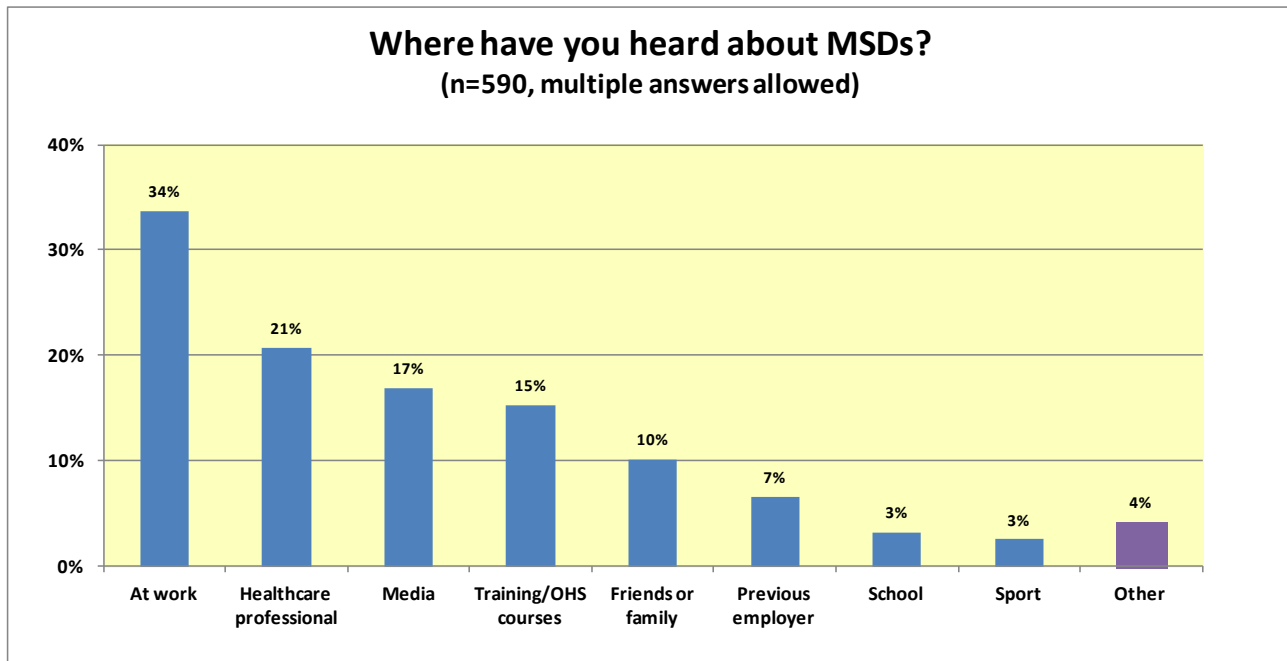
Graph A2.3

Self-defined awareness of MSDs was significantly higher in the extractive sector than in coal or metalliferous industries. However care needs to be taken with this conclusion due to the relatively small sample size for the extractive sector, $n = 143$.

There were no significant differences in awareness between the coal and metalliferous sectors.

Those respondents who claimed at least some level of awareness of MSDs were then asked (in an unprompted, open-ended question) where they had heard about it. The responses have been coded, and are shown in Graph A3, below. Note that a number of employees provided more than one source.

WHERE HAVE YOU HEARD ABOUT MSDs? (IF YES TO SOME LEVEL OF AWARENESS)



Graph A3

This indicates that the largest source of information was the respondent's current workplace (or "at work" generally), being nominated by 34% of those with some awareness. Twenty one per cent had heard about it through a healthcare professional, 17% via media and 15% through some form of training or WHS course (noting that this may duplicate in some instances with "at work").

PART B: MSD STATEMENTS

The bulk of the survey comprised twelve questions relating to respondents' beliefs and understanding of MSD causes, prevention and management. In each case respondents were asked to place a cross on an 11-point scale - marked as 0 to 10, with a midpoint of 5 - between two competing statements. (See survey form, Appendix 1).

This was designed to identify in each instance: (a) which statement they believed to be true or closest to their belief/understanding; and (b) the strength of that belief/understanding.

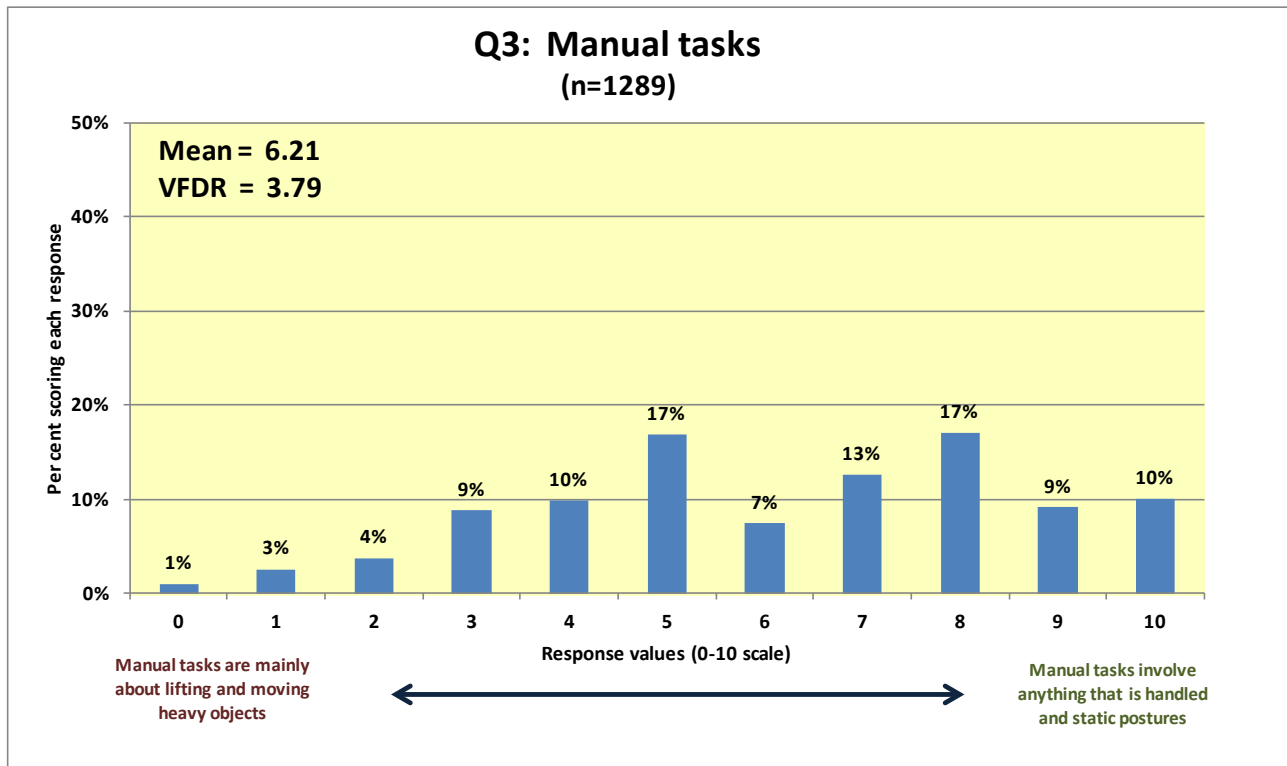
The individual results are shown in Graphs B1 to B12, together with the mean (i.e. average) rating and the "variation from desired result" (VFDR). Depending on whether the desired statement was on the left or right of the graph⁴, the VFDR score will either be the mean, or 10 minus the mean.

A summary of VFDR's (highest to lowest) for the 12 questions is then shown separately in Graph B13.

The "desired" result is shown in green on the horizontal axis of each graph, and the "undesired" in red. For the sake of consistency, all graphs are scaled from 0-50% response.

⁴ This varied throughout the 12 questions to prevent repetition or order bias

MANUAL TASKS



Graph B1

Manual tasks, by experience, age, awareness, industry and region

Question 3 Characteristic		VFDR
Experience	Less than 3 years	3.72
	3-10 years	3.82
	More than 10 years	3.76
Age	18-34	3.62
	35-44	3.73
	45+	4.03
Awareness	Quite/Very aware	3.43
	Had not heard of it	4.04
Industry	Coal	3.59
	Metalliferrous	4.04
	Extractive	4.08
Region	Hunter/Northern	3.50
	Central West	4.09
	South western	3.35
	Illawarra/Southern	3.53
	North Coast	4.23

Table B1

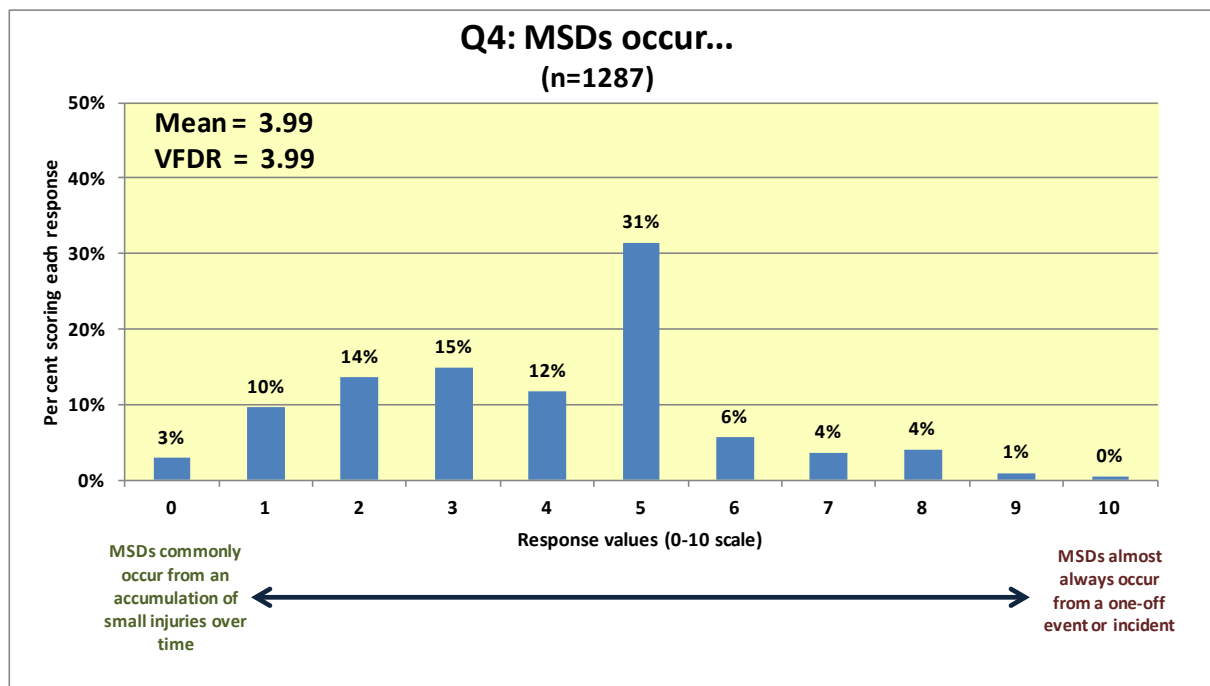
This question showed one of the highest diversity of views, with a relatively equal distribution right across the response spectrum. Likewise, only 38% of respondents were at or close to the desired score of 10¹.

While the majority of comments were either neutral or on the correct side of the scale, this nonetheless suggests relatively poor understanding of the notion that MSDs are not principally related to lifting and moving heavy objects.

Interestingly, younger respondents (i.e. those aged 18-34) enjoyed a more favourable mean than those aged 45-plus. This suggests that younger mine workers are more aware than their older colleagues that there is a wider context to MSDs than merely "lifting and moving heavy objects".

Meanwhile those in the coal mining industry were more likely to understand the potential causes than those in the metalliferrous or extractive industries. And as one would expect, those claiming high awareness of MSDs earlier in the survey were also more likely to skew towards the desired response than those who didn't. There was no significant difference in response by experience.

MSDs OCCUR...



Graph B2

MSDs occur, by experience, age, awareness, industry and region

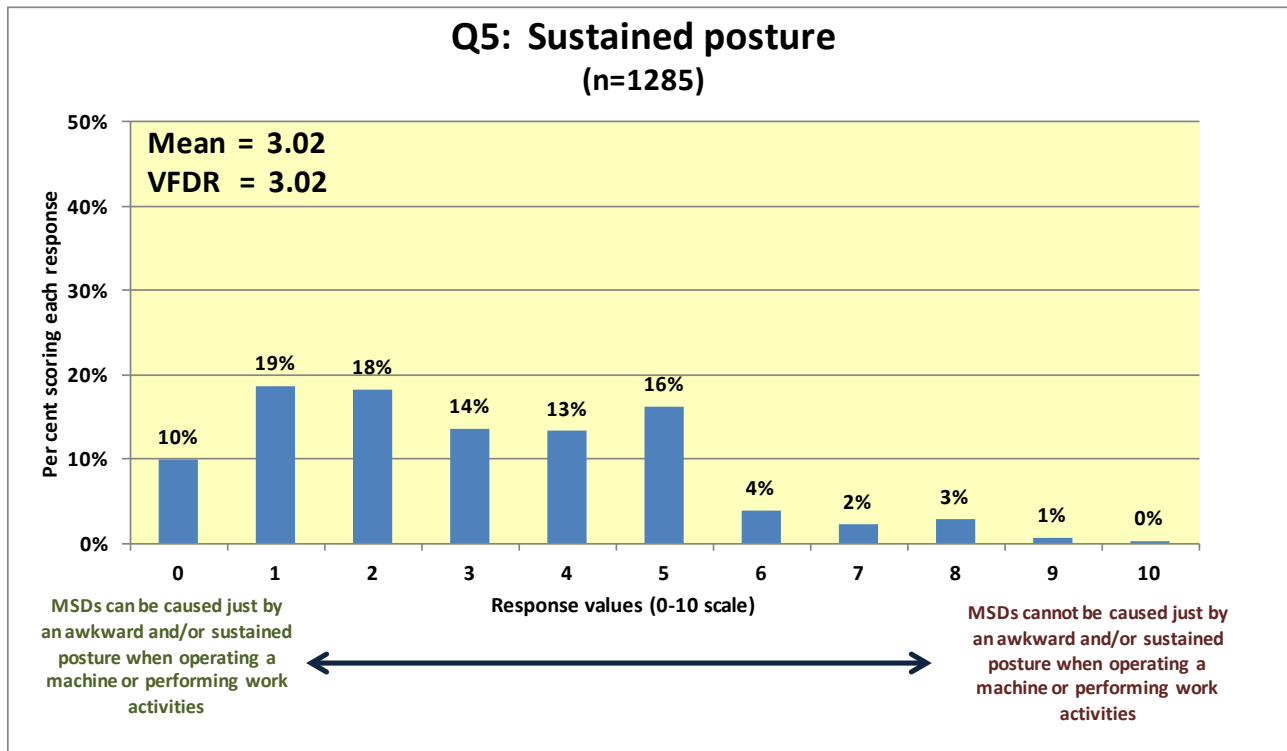
Question 4 Characteristic	VFDR	
Experience	<i>Less than 3 years</i>	3.98
	<i>3-10 years</i>	3.88
	<i>More than 10 years</i>	4.13
Age	<i>18-34</i>	3.93
	<i>35-44</i>	3.86
	<i>45+</i>	4.17
Awareness	<i>Quite/Very aware</i>	3.84
	<i>Had not heard of it</i>	4.14
Industry	<i>Coal</i>	3.92
	<i>Metalliferrous</i>	4.10
	<i>Extractive</i>	4.01
Region	<i>Hunter/Northern</i>	3.94
	<i>Central West</i>	4.11
	<i>South western</i>	3.83
	<i>Illawarra/Southern</i>	3.84
	<i>North Coast</i>	4.14

Table B2

There was considerable uncertainty around which of these two statements was closer to the truth, with over 30% of respondents opting for the mid-point and just 27% at or close to the ideal response. This suggests that many respondents: (a) believed both statements to have merit; and/or (b) were unsure which statement was correct.

Logically, those with higher levels of MSD awareness were most likely to opt for (or at least towards) the “accumulation of small injuries over time” option. However there were no other significant differences in mean scores by age, experience, industry or region.

SUSTAINED POSTURE



Graph B3

Sustained posture, by experience, age, awareness, industry and region

Question 5 Characteristic		VFDR
Experience	Less than 3 years	2.81
	3-10 years	2.93
	More than 10 years	3.31
Age	18-34	2.71
	35-44	3.03
	45+	3.36
Awareness	Quite/Very aware	2.53
	Had not heard of it	3.21
Industry	Coal	2.91
	Metalliferous	3.14
	Extractive	3.19
Region	Hunter/Northern	3.02
	Central West	3.17
	South western	2.56
	Illawarra/Southern	2.85
	North Coast	2.89

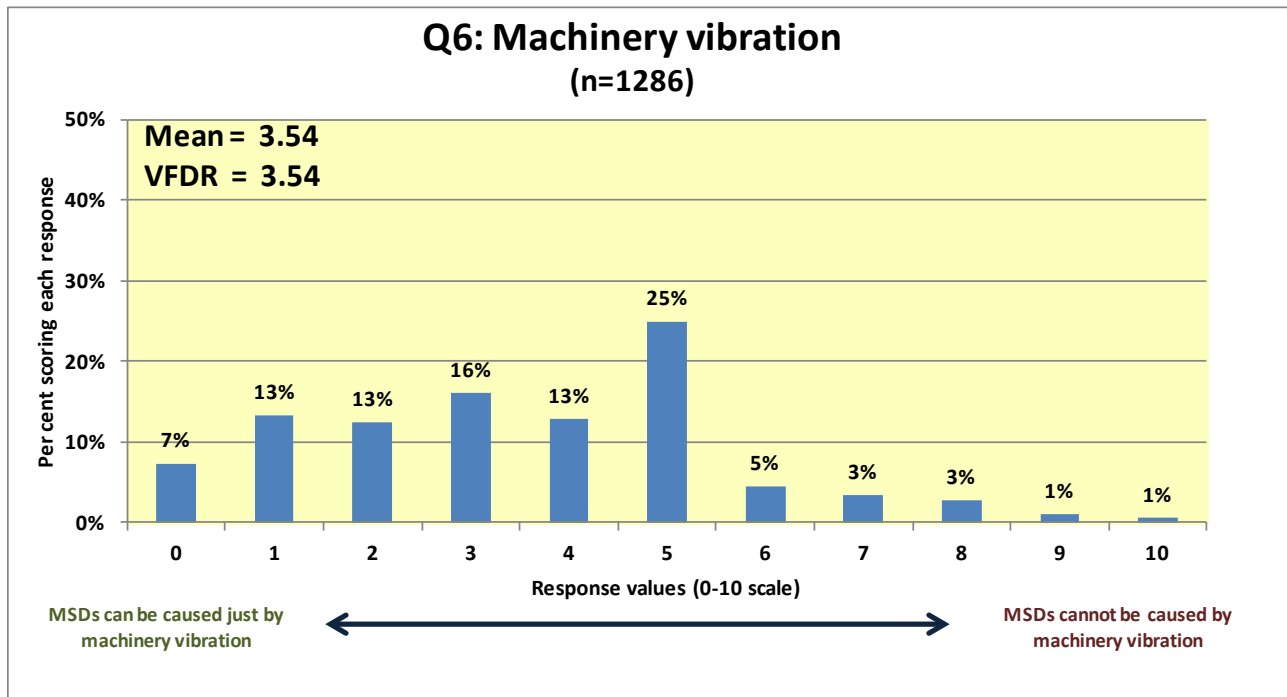
Table B3

This was the second-best answered question, with the vast majority of responses clustered in the 0 to 5 range, and almost half the respondents (47%) at or close to the ideal score. This suggests that the majority of employees understand the link between posture and MSDs.

Younger employees (i.e. those aged 18-34) and those with the least level of experience (less than three years) actually showed the highest level of understanding. This could suggest that younger and/or less experienced respondents: (a) have been exposed to more recent training on this subject; and/or (b) are more receptive to that training. Older/more experienced mine employees on the other hand, may rely more on their own experience and (potentially) be less receptive to training or the challenging of their traditional beliefs.

Again, those with the highest self-defined awareness provided the highest quality responses for this question. There were no significant differences in response by industry or region.

MACHINERY VIBRATION



Graph B4

Machinery vibration, by experience, age, awareness, industry and region

Question 6 Characteristic		VFDR
Experience	Less than 3 years	3.31
	3-10 years	3.54
	More than 10 years	3.72
Age	18-34	3.33
	35-44	3.47
	45+	3.81
Awareness	Quite/Very aware	3.08
	Had not heard of it	3.78
Industry	Coal	3.51
	Metalliferous	3.52
	Extractive	3.76
Region	Hunter/Northern	3.50
	Central West	3.57
	South western	2.70
	Illawarra/Southern	3.71
	North Coast	3.50

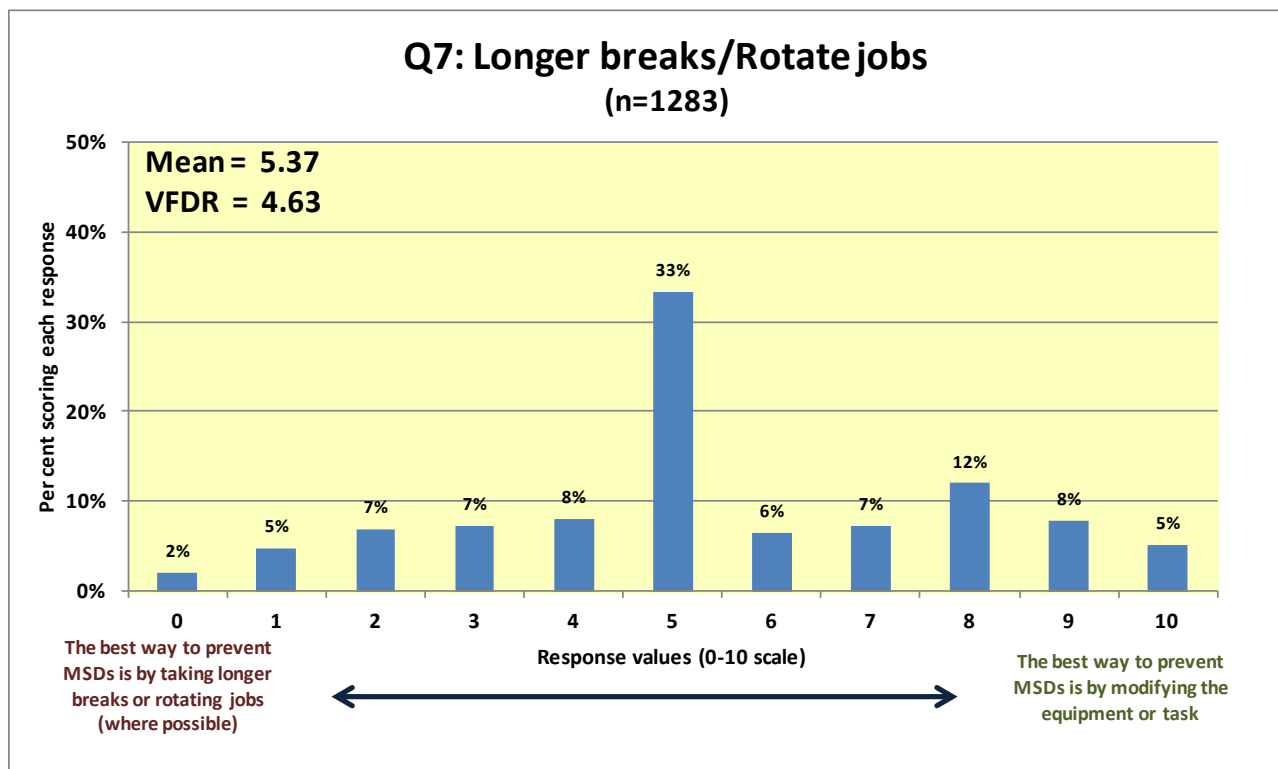
Table B4

This was one of the better answered questions, with 87% of respondents providing a score of 5 or less on the 11-point scale, and one-third being at or close to the desired result. This suggests that the vast majority of mine employees see some link between machinery vibrations and MSDs.

What is more interesting, and perhaps surprising, is that this awareness was highest among younger and less experienced workers. As with the sustained posture question (Graph B3 and Table B3), this suggests that younger/less experienced workers may be more conducive to receiving up-to-date training on subjects such as MSD prevention.

Those with high levels of MSD awareness and respondents from south-western NSW also had a deeper understanding of the importance of machinery vibration as an MSD factor.

LONGER BREAKS/ROTATE JOBS



Graph B5

Longer breaks/rotate jobs, by experience, age, awareness, industry and region

Question 7 Characteristic		VFDR
Experience	Less than 3 years	4.68
	3-10 years	4.74
	More than 10 years	4.40
Age	18-34	4.86
	35-44	4.62
	45+	4.31
Awareness	Quite/Very aware	4.50
	Had not heard of it	4.79
Industry	Coal	4.73
	Metalliferrous	4.56
	Extractive	4.31
Region	Hunter/Northern	4.60
	Central West	4.61
	South western	5.01
	Illawarra/Southern	4.59
	North Coast	4.83

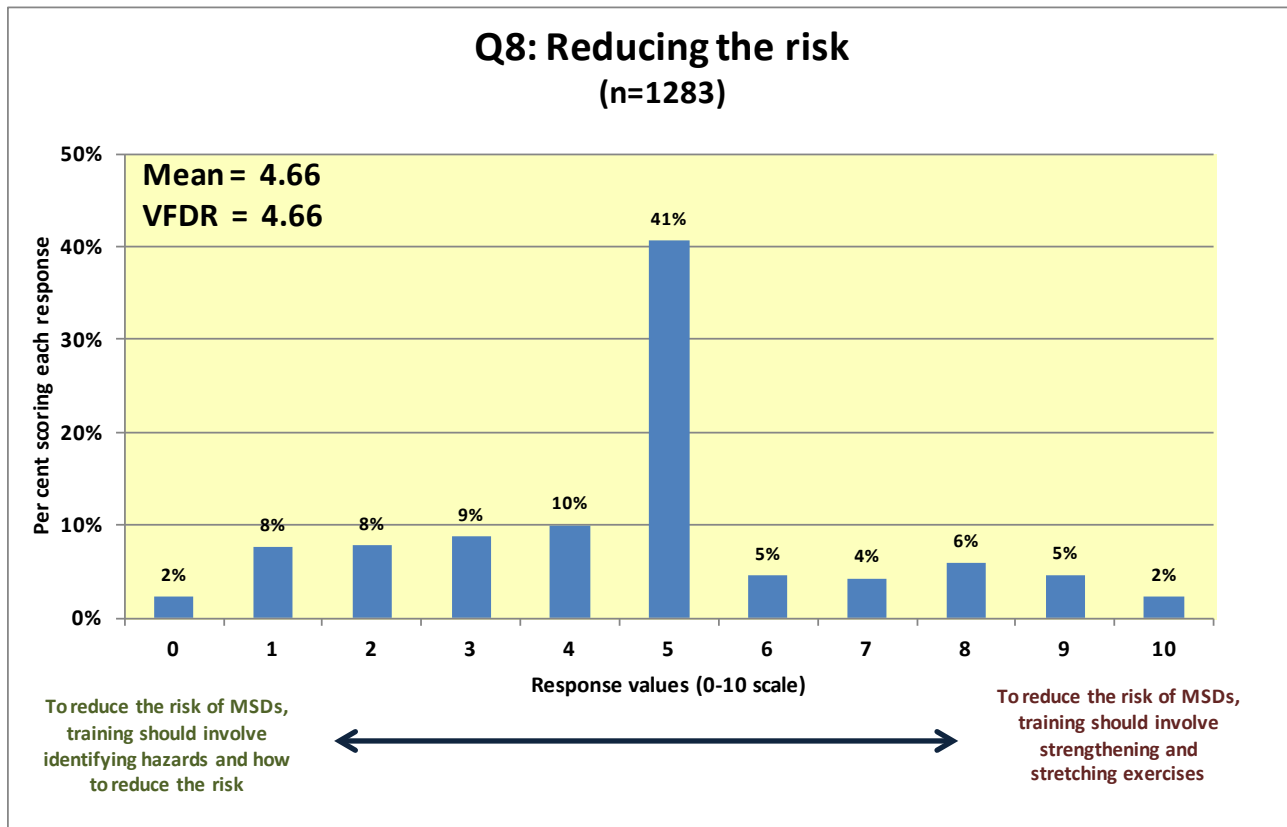
Table B5

This symmetrical chart indicates a wide divergence of opinion around a popular (33%) mid-point mode. It suggests that many respondents felt that both extremes of response were valid, which IAU agrees is a reasonable belief.

With just 24% of employees providing a response at or near ideal, the VFDR was among the highest of any set of statements. However this is largely accounted for by the high number of mid-scale ratings.

Older employees (45-plus) were more likely than their younger colleagues to acknowledge the importance of modifying equipment or tasks. Apart from this there were no significant variations in scores by different response categories.

REDUCING THE RISK



Graph B6

Reducing the risk by age, awareness, industry and region

Question 8 Characteristic		VFDR
Experience	Less than 3 years	4.43
	3-10 years	4.82
	More than 10 years	4.68
Age	18-34	4.56
	35-44	4.59
	45+	4.89
Awareness	Quite/Very aware	4.55
	Had not heard of it	4.73
Industry	Coal	4.70
	Metalliferous	4.70
	Extractive	4.40
Region	Hunter/Northern	4.79
	Central West	4.72
	South western	4.51
	Illawarra/Southern	4.53
	North Coast	4.33

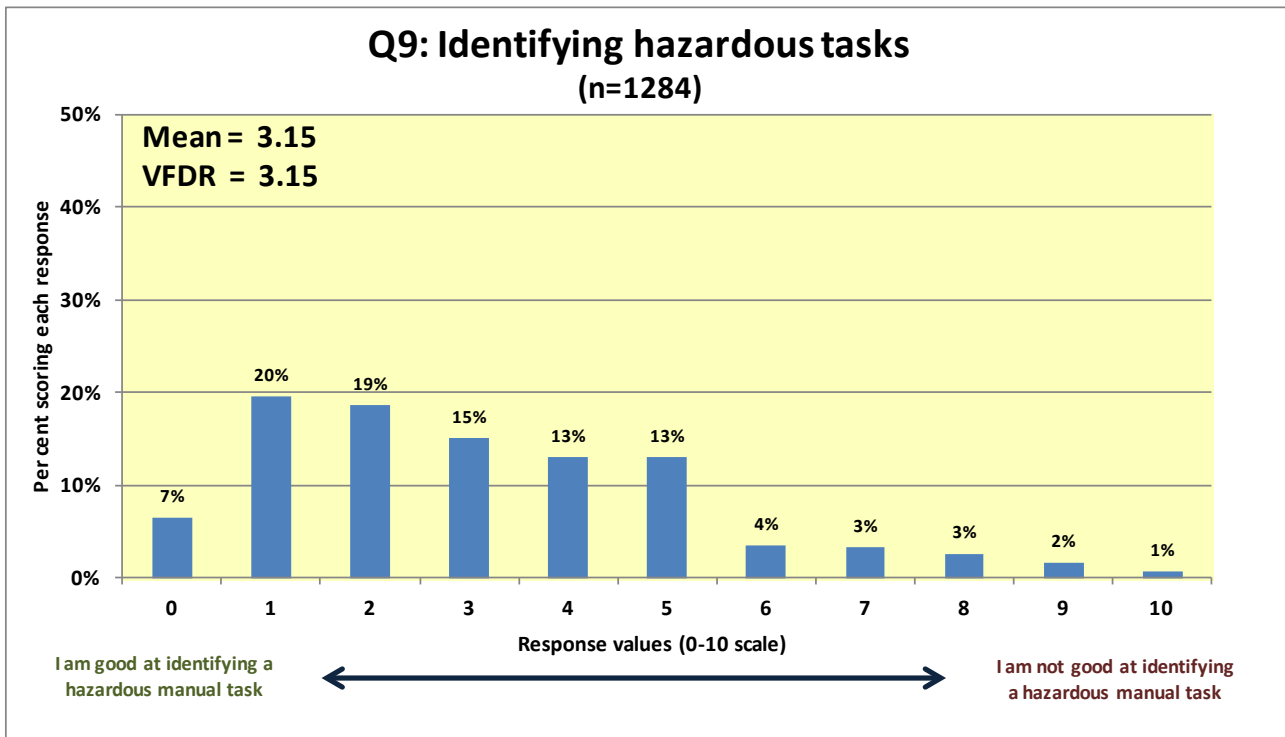
Table B6

This frequency distribution presents a more extreme version of that shown in Graph B6. The modal score of 5 – offered by some 41% of respondents – once again suggests either a widespread belief that both statements had equal validity, and/or that respondents were simply unsure which option was correct. As with the previous question (Graph B5), IAU agrees that both extremes have merit.

Nonetheless just 13% of survey participants were at or close to the ideal (left-hand) statement, and hence the VFDR was the second highest of any set of statements - and the highest of any knowledge-based statement set.

As with some previous knowledge-based questions, the least experienced respondents typically provided a higher quality response than those who had worked in the mines for three or more years.

IDENTIFYING HAZARDOUS TASKS



Graph B7

Identifying hazardous tasks by age, awareness, industry and region

Question 9 Characteristic		VFDR
Experience	<i>Less than 3 years</i>	3.10
	<i>3-10 years</i>	3.00
	<i>More than 10 years</i>	3.36
Age	<i>18-34</i>	2.81
	<i>35-44</i>	3.26
	<i>45+</i>	3.48
Awareness	<i>Quite/Very aware</i>	2.89
	<i>Had not heard of it</i>	3.17
Industry	<i>Coal</i>	3.01
	<i>Metalliferous</i>	3.35
	<i>Extractive</i>	3.33
Region	<i>Hunter/Northern</i>	3.33
	<i>Central West</i>	3.35
	<i>South western</i>	2.78
	<i>Illawarra/Southern</i>	2.75
	<i>North Coast</i>	3.14

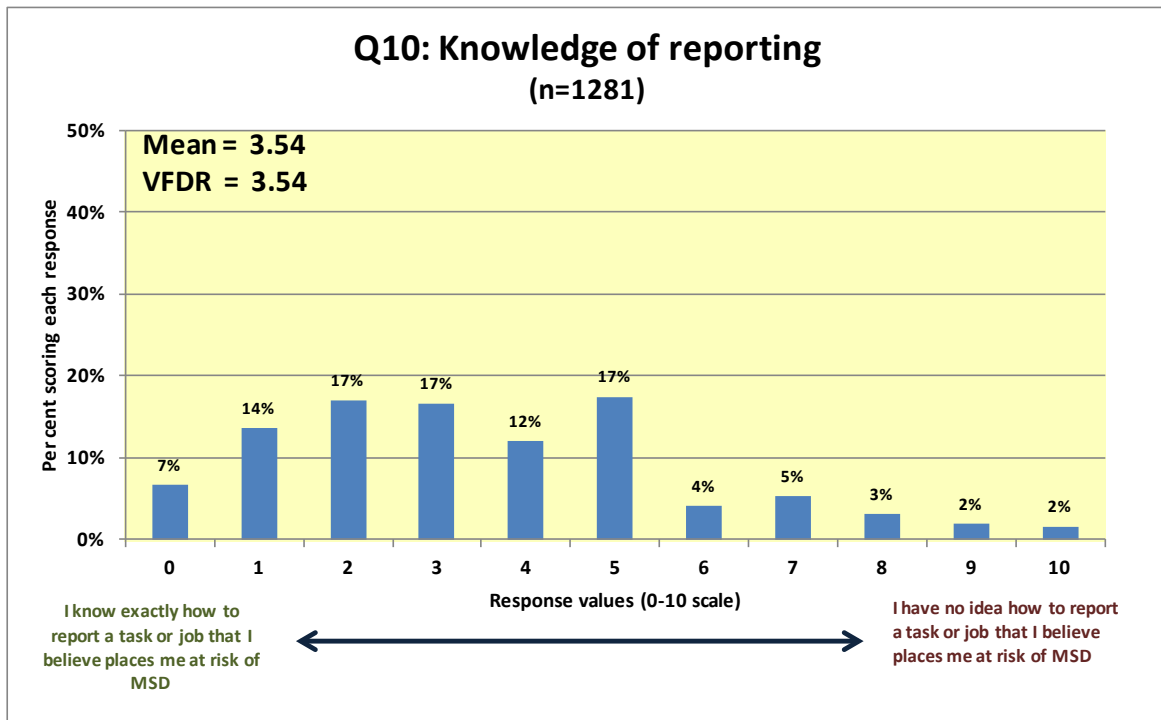
Table B7

Respondents exhibited relatively high levels of self-belief that they were good at identifying hazardous tasks. This is suggested by the mode of 2, 46% of respondents being at or near the ideal score, and a relatively low VFDR of 3.15.

Interestingly, younger workers (i.e. those aged 18-34) were significantly more confident than their peers aged 45-plus. This may represent the confidence of youth, and/or reflect more recent training. Likewise, those with 3-10 years' experience were the most likely to say they were good at identifying manual task hazards.

Meanwhile, coal industry respondents were significantly more likely than those in the other two sectors to claim to be good hazard-spotters.

KNOWLEDGE OF REPORTING



Graph B8

Knowledge of reporting by age, awareness, industry and region

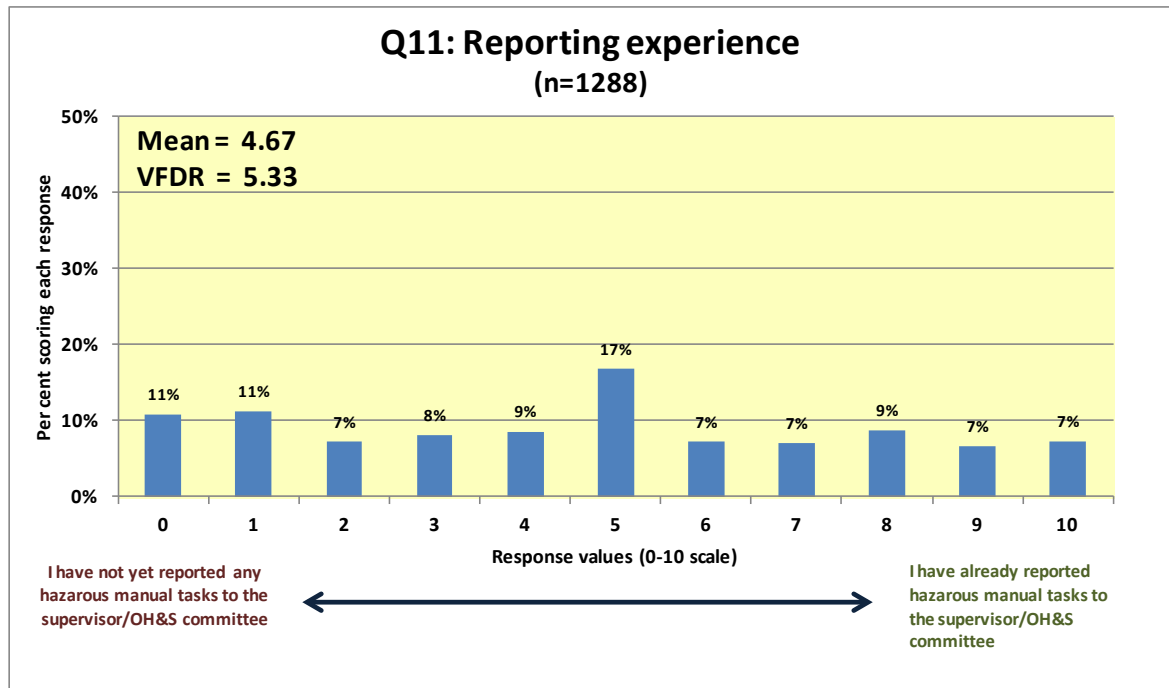
Question 10 Characteristic		VFDR
Experience	Less than 3 years	3.58
	3-10 years	3.47
	More than 10 years	3.57
Age	18-34	3.39
	35-44	3.53
	45+	3.71
Awareness	Quite/Very aware	2.93
	Had not heard of it	3.83
Industry	Coal	3.46
	Metalliferrous	3.68
	Extractive	3.58
Region	Hunter/Northern	3.56
	Central West	3.74
	South western	3.14
	Illawarra/Southern	3.30
	North Coast	3.36

Table B8

As in the previous question, respondents generally showed a high degree of confidence in their ability to report a task or job placing them at risk of an MSD. There was a relatively even distribution in the 1-5 range, and 38% were at or close to the ideal.

There were no significant variations in scores by age or experience. However those employees in south-western sites provided a significantly more informed response than those in the central-west.

REPORTING EXPERIENCE



Graph B9

Reporting experience by age, awareness, industry and region

Question 11 Characteristic		VFDR
Experience	Less than 3 years	6.27
	3-10 years	5.34
	More than 10 years	4.27
Age	18-34	5.90
	35-44	5.18
	45+	4.64
Awareness	Quite/Very aware	4.61
	Had not heard of it	5.57
Industry	Coal	4.94
	Metalliferrous	6.24
	Extractive	4.77
Region	Hunter/Northern	5.11
	Central West	5.90
	South western	4.99
	Illawarra/Southern	4.64
	North Coast	5.00

Table B9

The question of whether respondents had already reported any hazardous manual tasks is slightly problematic, in that a negative response could imply anything from (at one extreme) a fear of reporting such hazards, through to (the other extreme) working in a mine site with few WHS hazards to report.

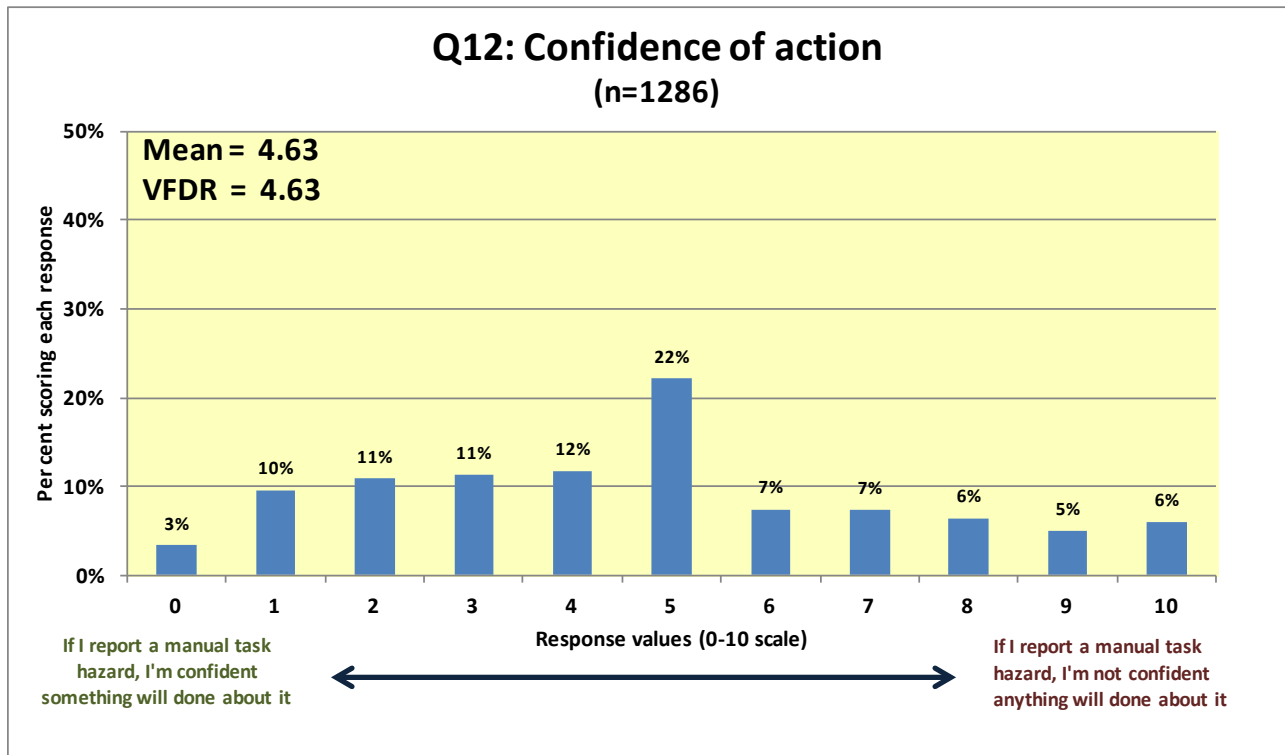
This may partially explain the symmetrical pattern of responses –with a mode of just 17% at the midpoint. Unless we know which interpretation to place on the “have not reported any hazard manual tasks” – which can arguably only be done on a mine-by-mine basis – nor can we say with certainty which is the “desirable” result.

However if we accept as a general principle that it is better for employees to have reported hazardous manual tasks than not, then the VFDR of 5.33 is the worst of any of the 12 statement pairs.

In this instance, older and more experienced workers were significantly more likely than their younger/less experience counterparts to have reported perceived hazards. While this may be simply due to the fact that they had had more opportunity to do so, it may also suggest a greater confidence in raising such issues arising from factors such as experience, status or attitude.

Meanwhile extractive industries were the most likely to have reported manual task hazards, along with respondents working in the Illawarra/southern region.

CONFIDENCE OF ACTION



Graph B10

Confidence of action by experience, age, awareness, industry and region

Question 12 Characteristic		VFDR
Experience	Less than 3 years	4.33
	3-10 years	4.67
	More than 10 years	4.83
Age	18-34	4.52
	35-44	4.42
	45+	4.91
Awareness	Quite/Very aware	4.44
	Had not heard of it	4.72
Industry	Coal	4.89
	Metalliferrous	4.52
	Extractive	3.58
Region	Hunter/Northern	4.17
	Central West	4.72
	South western	5.16
	Illawarra/Southern	4.88
	North Coast	3.00

Table B10

An even and relatively symmetrical distribution of results suggests a wide range of experiences among different employees and mine sites. And the modal score of 5, nominated by 22% of respondents, indicates that many were unsure about how receptive mine management would be to manual task hazards being addressed.

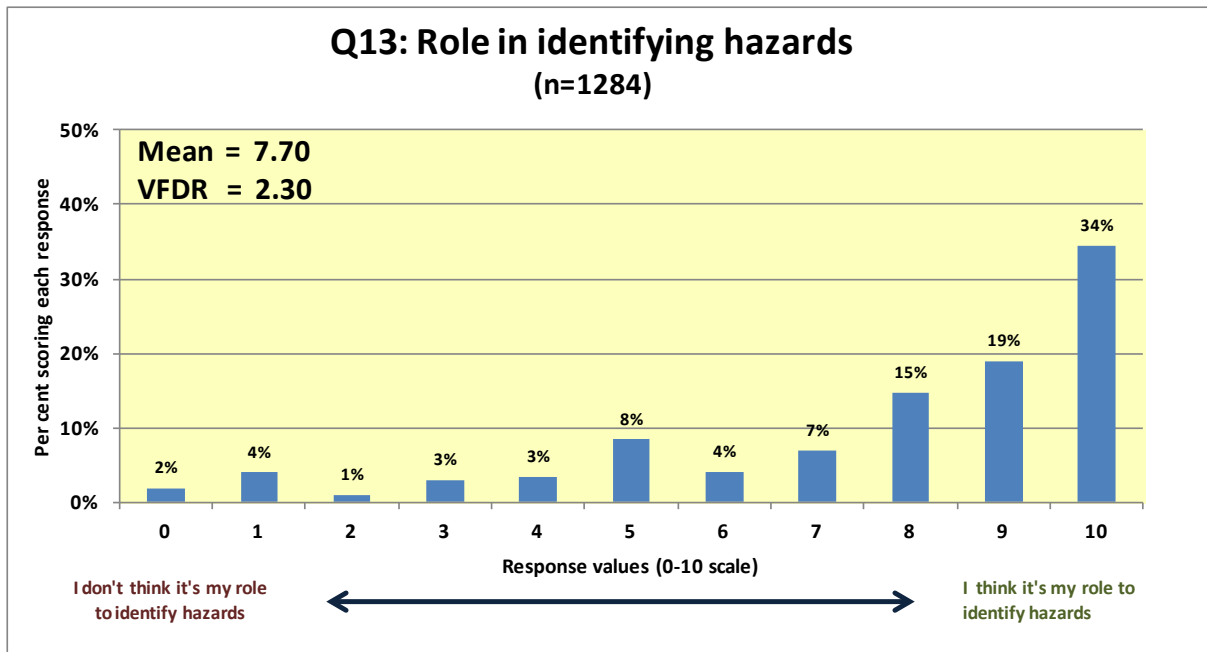
It also appears that the oldest and more experienced categories of employees had the least amount of confidence. While this may just be age- or experience-related scepticism, it is a concern given this same age/experience arguably gives these mine workers a greater ability to identify hazards in the first place.

Those in extractive industries had a significantly higher faith in management, while those in the coal industry were the least confident that issues would be addressed.

Likewise those on the north coast had the highest confidence in management's willingness to address hazards, with those in south-western NSW having the least.⁵

⁵ However caution should be taken in extrapolating these results due to the small sample sizes (North Coast n = 37, south-western NSW n = 69)

ROLE IN IDENTIFYING HAZARDS



Graph B11:

Role in identifying hazards by experience, age, awareness, industry and region

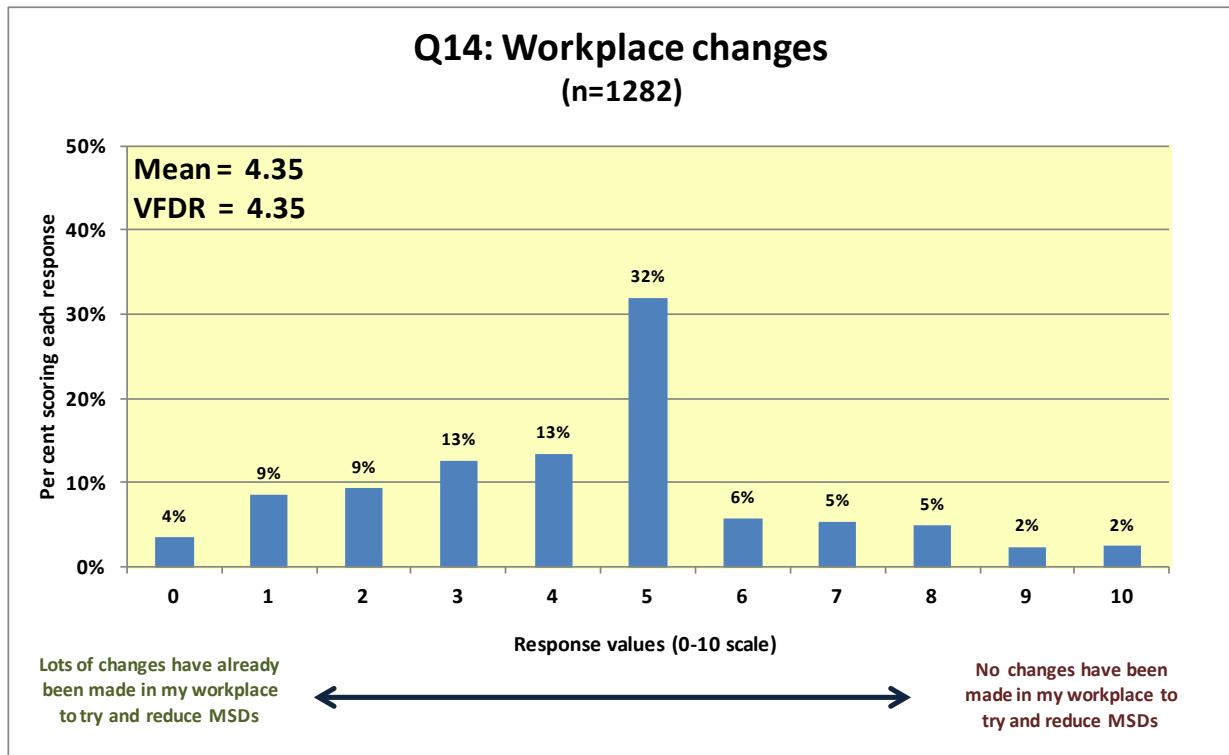
Question 13 Characteristic		VFDR
Experience	Less than 3 years	2.28
	3-10 years	2.16
	More than 10 years	2.37
Age	18-34	2.13
	35-44	2.25
	45+	2.43
Awareness	Quite/Very aware	1.93
	Had not heard of it	2.47
Industry	Coal	2.21
	Metalliferous	2.72
	Extractive	1.61
Region	Hunter/Northern	2.04
	Central West	2.70
	South western	1.88
	Illawarra/Southern	1.94
	North Coast	2.08

Table B11

This was the most encouraging of all questions, with 68% of respondents answering at or close to the desired response and a modal score of 10. Conversely, just 13% of those surveyed argued that (on balance) it was not their role to identify hazards.

Results were consistent by age and experience. While those in extractive industries were significantly more likely than those in metalliferous-based respondents to say that spotting hazards was their role, results were nonetheless favourable across all three sectors.

WORKPLACE CHANGES



Graph B12

Workplace changes by experience, age, awareness, industry and region

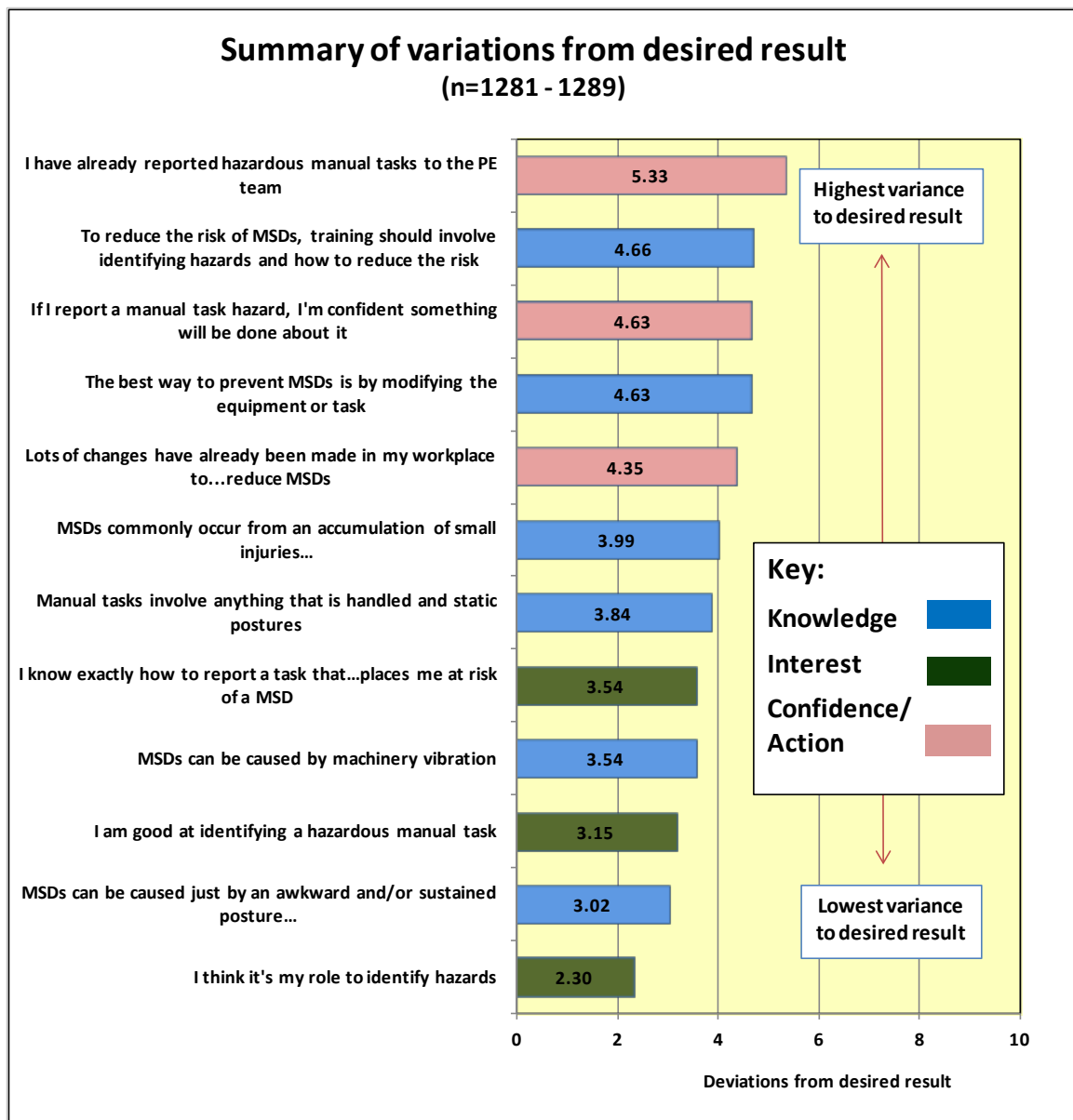
Question 14 Characteristic		VFDR
Experience	<i>Less than 3 years</i>	4.34
	<i>3-10 years</i>	4.38
	<i>More than 10 years</i>	4.31
Age	<i>18-34</i>	4.31
	<i>35-44</i>	4.43
	<i>45+</i>	4.29
Awareness	<i>Quite/Very aware</i>	3.94
	<i>Had not heard of it</i>	4.46
Industry	<i>Coal</i>	4.35
	<i>Metalliferrous</i>	4.39
	<i>Extractive</i>	4.20
Region	<i>Hunter/Northern</i>	4.18
	<i>Central West</i>	4.43
	<i>South western</i>	4.70
	<i>Illawarra/Southern</i>	4.32
	<i>North Coast</i>	3.81

Table B12

With almost one-third of respondents providing a score of 5, it appears the consensus in most workplaces was that at least some changes had been made to try and reduce MSDs. But likewise, there appeared to be a widespread view that more remains to be done.

There were no significant variations in scores by age, experience, industry or region.

SUMMARY OF VARIATIONS FROM DESIRED RESULT (VFDR)



Graph B13

Graph B13 summarises the 12 VFDR scores, ranked from highest to lowest. (The higher the score, the further was that mean score from the “desired” statement shown at left.)

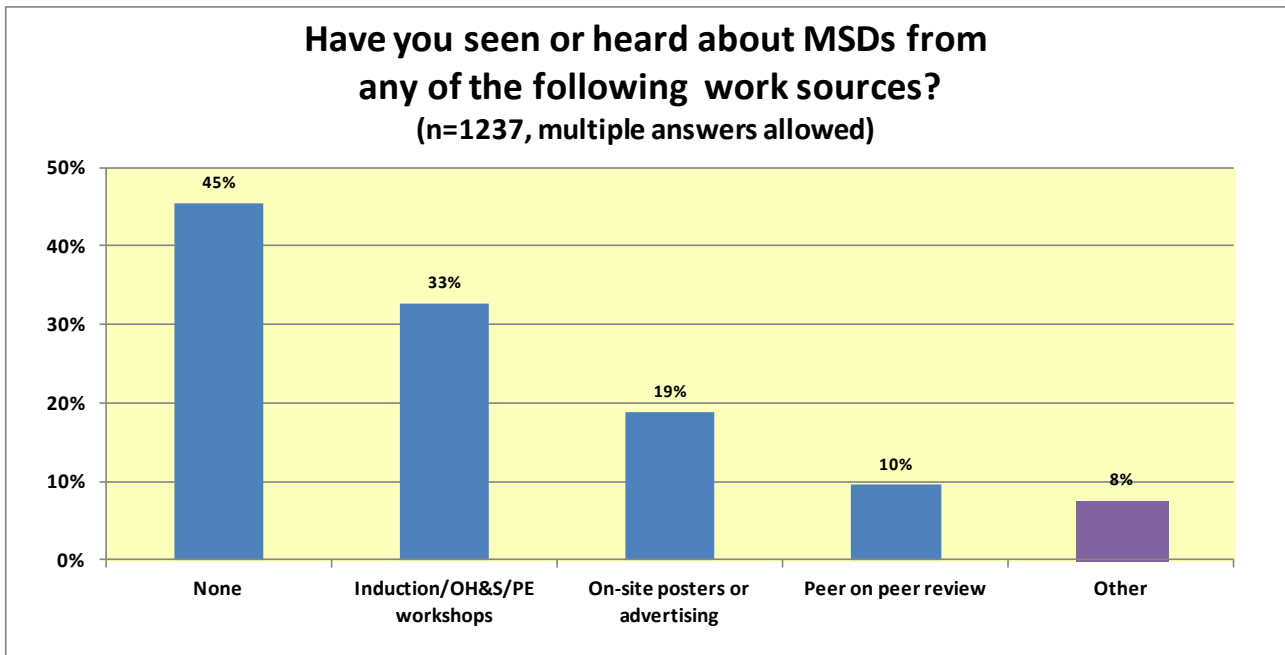
It suggests that respondents generally showed a high level of interest in identifying and reporting hazardous manual tasks designed to minimise MSDs. However as shown by the pink bars, this has yet to translate into action – though we don’t know from the data if this is due to a lack of confidence or a lack of need. The knowledge-based questions, meanwhile, varied widely from poor (“To reduce the risk of MSDs, training should involve identifying hazards...” to good (“MSDs can be caused just by an awkward and/or sustained posture...”)/

While the results are hopefully of interest in themselves, their true value will lie in any post-campaign/workshop research when longitudinal (i.e. time-based) changes can be noted.

PART C: MENTIONS OF MSDS IN THE WORKPLACE

The survey concluded with a question designed to see where, from a series of workplace-related sources, respondents had already seen or heard mention of MSDs:

HAVE YOU SEEN OR HEARD ANY MENTION OF MSDS FROM ANY OF THE FOLLOWING SOURCES?



Graph C1

Almost half the sample (45%) acknowledged that they had not seen or heard any information about MSDs in a work context. For those who had, the most widely recalled source (from a prompted list) were induction, WHS or participatory ergonomics (PE) workshops (33%), and on-site posters or advertising (19%). Just 10% claimed to have received MSD-related information from peer-on-peer reviews.

“Other” included toolbox talks, manual handling courses, training (generally), Coal Safe briefings and word-of-mouth.

Work-related MSD information sources - by age

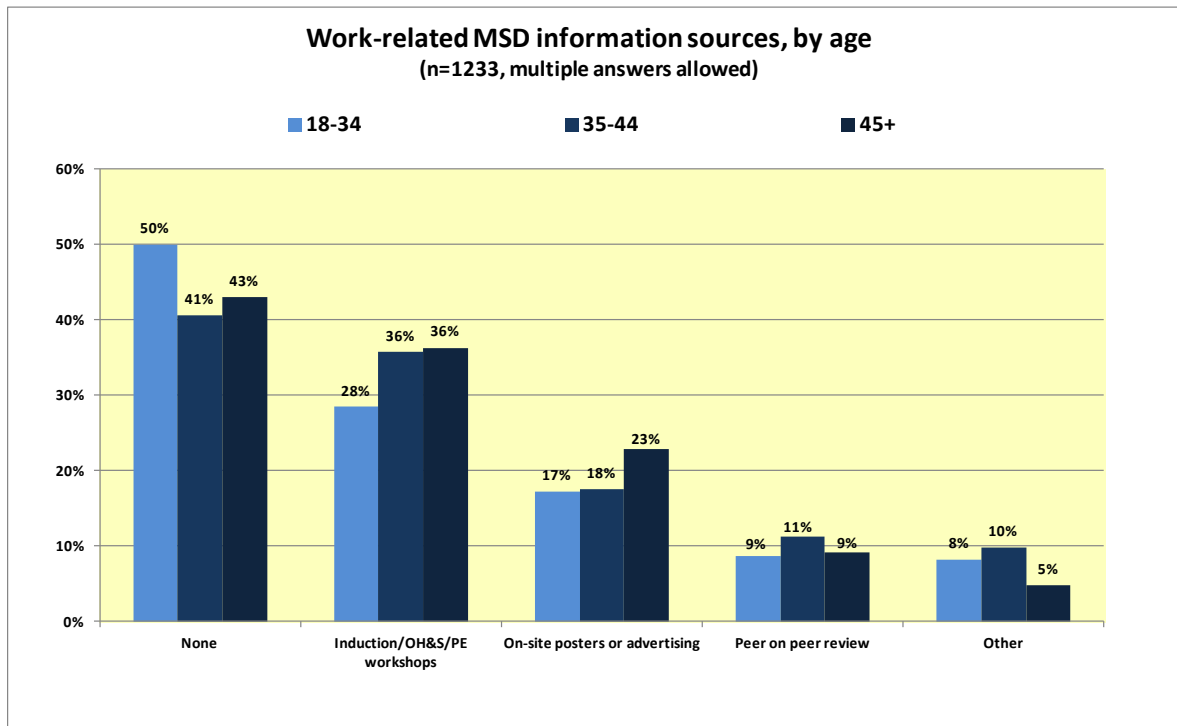


Table C1

Younger respondents were less likely to have encountered MSD-related materials at work than their older colleagues.

Work-related MSD information sources - by experience

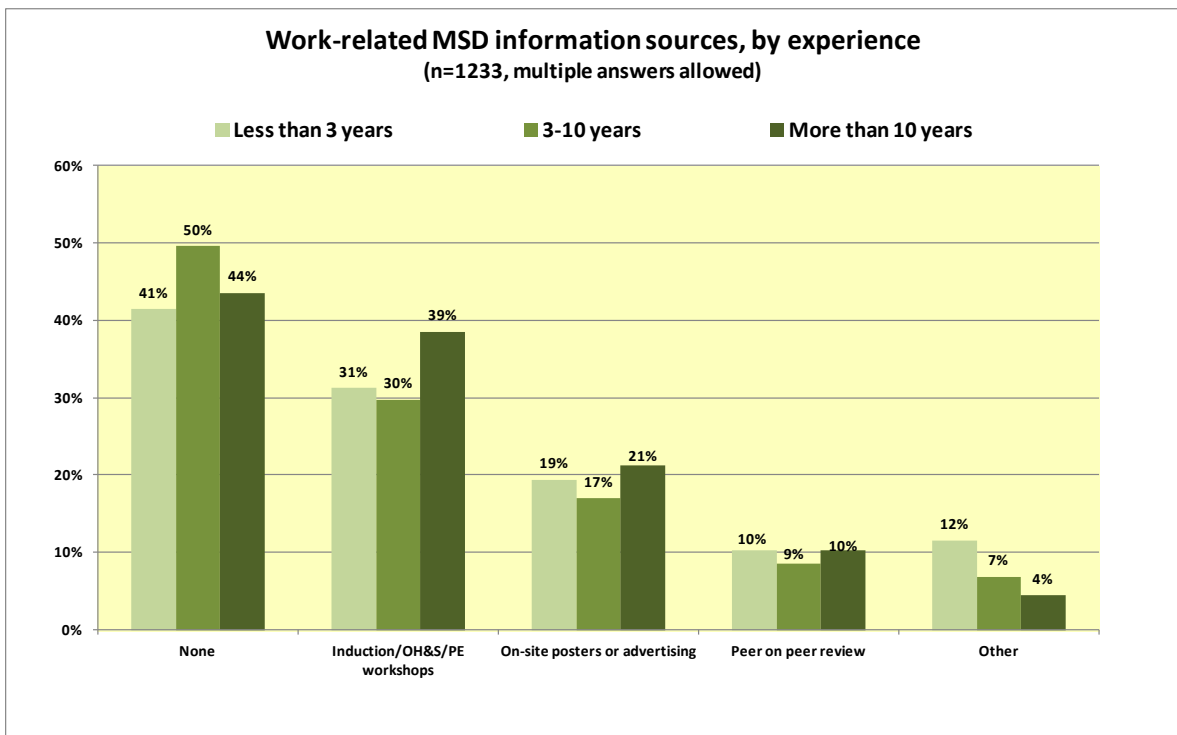


Table C2

Meanwhile Table C2 indicates that those with 3-10 years' experience were the least likely to have seen anything about MSDs at work, while those with the greatest experience were the most likely to have attended workshops at which MSDs were discussed.

Work-related MSD information sources - by industry

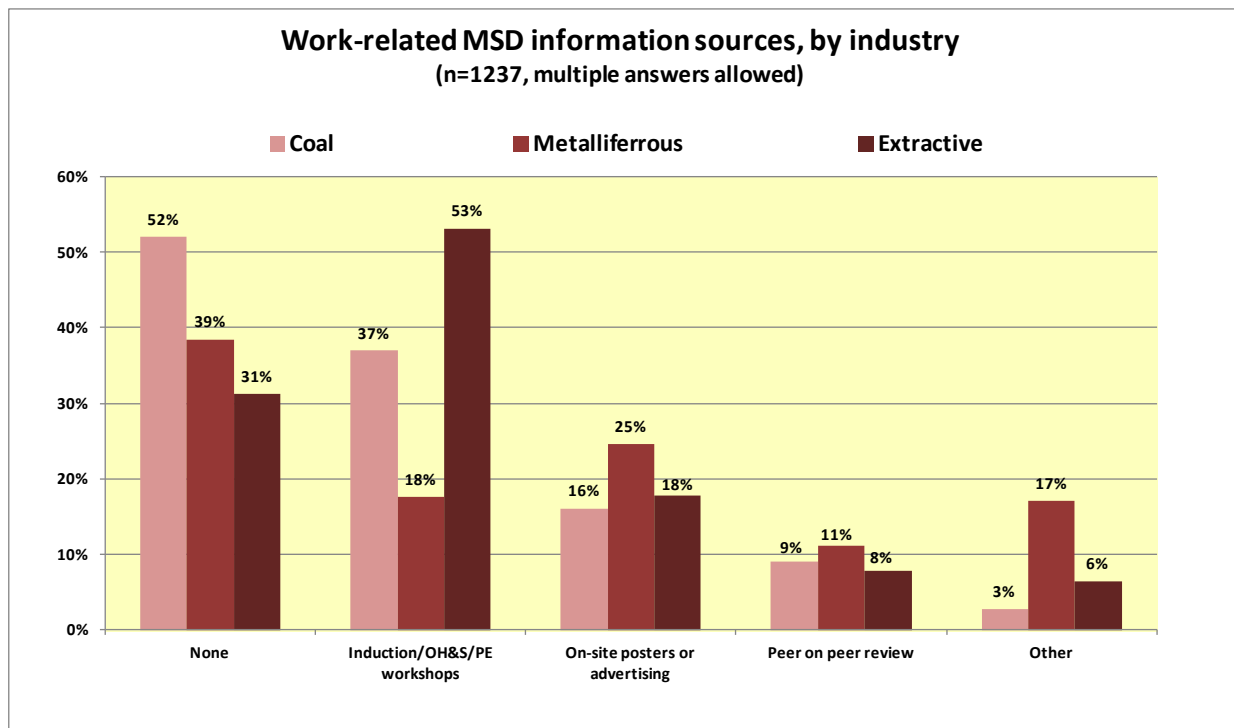


Table C3

Those in the coal sector were the most likely to claim they had not seen any MSD information sources in the workplace, while those on the extractive side were most likely to have attended MSD-related workshops⁶.

⁶ Though keeping in mind the small sample size (n = 146) for this sector

APPENDIX 1: SURVEY FORM



NSW Mine Employee WHS survey

This survey is designed to understand what you know about musculo-skeletal disorders (MSD's), and how they can be prevented in the workplace (**MSD's describe any injuries that occur to muscles, joints, tendons, ligaments, cartilage or spinal discs**).

Note that there are no right or wrong answers, and all responses will be confidential. So please tell us what you really think!

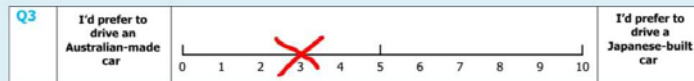
Q1 How aware are you of the term "Musculo-skeletal disorders" or "MSD's"?
(Please circle one of the following options)

- Very Aware Quite aware Slightly aware Hadn't heard of it
1 **2** **3** **4** (Skip to Question 3)

Q2 Where have you heard about MSD's?

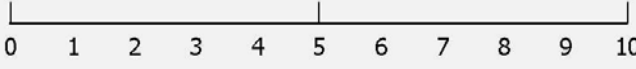
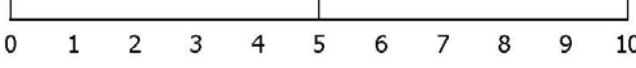

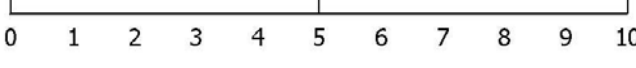


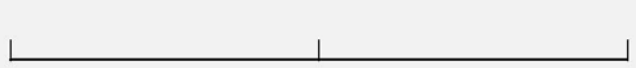
.....

Following are 12 short statements relating to MSD's and other causes of workplace injuries. Please mark on each line which statement you are more inclined to agree with, and to what extent (see example below).



Please read each statement (left and right) before deciding where to mark each line.

Q3	Manual tasks are mainly about lifting and moving heavy objects		Manual tasks involve anything that is handled and static postures
Q4	MSD's commonly occur from an accumulation of small injuries over time		MSD's almost always occur from a one-off event or incident
Q5	MSD's can be caused just by an awkward and/or sustained posture when operating a machine or performing work activities		MSD's cannot be caused by an awkward and/or sustained posture when operating a machine or performing work activities
Q6	MSD's can be caused just by machinery vibration		MSD's cannot be caused by machinery vibration
Q7	The best way to prevent MSD's is by taking longer breaks or rotating jobs (where possible)		The best way to prevent MSD's is by modifying the equipment or task

Q8	To reduce the risk of MSD's, training should involve identifying hazards and how to reduce the risk		To reduce the risk of MSD's, training should involve strengthening and stretching exercises
Q9	I am good at identifying a hazardous manual task		I am not that good at identifying a hazardous manual task
Q10	I know exactly how to report a task or job that I believe places me at risk of a MSD		I have no idea how to report a task or job that I believe places me at risk of a MSD
Q11	I have not yet reported any hazardous manual tasks to the Supervisor or WHS Committee		I have already reported hazardous manual tasks to the Supervisor or WHS Committee
Q12	If I report a manual task hazard, I'm confident something will be done about it		If I report a manual task hazard, I'm not at all confident anything will be done about it
Q13	I don't think it's my role to identify hazards		I think it's my role to identify hazards
Q14	Lots of changes have already been made in my workplace to try and reduce MSD's		No changes have been made in my workplace to try and reduce MSD's

Q15 Have you seen or heard mention of MSD's from any of the following work sources?
(Please tick any that apply)

- On-site posters or advertising
 Peer-on-Peer Review
 Induction or Workshops
 WHS
 Other (Please specify)
 None

Q16 How long have you been working in the mining industry?

- Less than 12 mths
 1-2yrs
 3-5 yrs
 6-10 yrs
 More than 10 years

Q17 How old are you?

- Less than 20
 20-24
 25-34
 35-44
 45-54
 55-64
 65-plus

THANK YOU! That's the end of the survey - your feedback is greatly appreciated.