

# **Study on the Costs Incurred by Small Businesses as a Result of Workplace Injuries**

**Final Report**

Submitted to

**Health and Safety Authority**

By

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Consultants**

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November 2012



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## Executive Summary

### Introduction

This independent report was completed for the Health and Safety Authority (HSA) by Indecon International Economic Consultants in association with Millward Brown Lansdowne. The objective of this research is to provide an assessment of the costs incurred by small businesses/employers in the retail, hospitality, manufacturing and other services sectors in Ireland due to work-related injuries.

Previous studies have estimated the cost of workplace accidents or injuries in Ireland, focusing on costs to society as a whole or on costs within high-risk sectors.<sup>1</sup> These reports have largely depended upon data reported to the HSA (injuries resulting in three or more days' absence from work and excluding the day of the accident). This present study was based on a survey of 809 small businesses undertaken in November 2011 and took into account workplace injuries experienced in the previous twelve months. This survey included small businesses, which employed either 1-9 employees or 10-49 employees, and across four sectors, namely Retail, Manufacturing, Services and Hospitality. In addition, further interviews were undertaken with ten businesses to assist in the compilation of a series of case studies, which provide a more in-depth assessment of workplace injuries and related costs to these businesses. The costs of workplace injuries recorded in this study are those costs recalled by the interviewees in response to the questionnaire. Businesses may have under-reported/understated costs in some cases.

### Summary of Research Findings

The data presented in this report are based on an aggregation of the findings of the survey research to the overall population of small businesses in Ireland in the hospitality, retail, manufacturing and 'other services'<sup>2</sup> sectors. The research focuses on the costs to employers/small businesses across these sectors.

This research indicates that an estimated total of 14,947 workplace injuries occurred across small businesses in these sectors in Ireland in the 12-month period to November 2011.<sup>3</sup> These include all workplace injuries experienced irrespective of the number of days absent from work or costs incurred. This estimate is based on just over 10% of the sample of 809 small businesses surveyed who indicated that their firms had experienced a workplace injury during the previous twelve months. Importantly, the research indicates that 31% of businesses employing between 10 and 49 persons and 46% of firms employing between one and nine persons believed that costs incurred due to workplace injuries were either significant or very significant.

The study also shows that the annual total costs of workplace-related injuries experienced by small businesses in the sectors examined is estimated at €18.5 million in the year to November 2011, with a mean annual cost of €9,138 per small business which experienced an injury (see table overleaf). These cost estimates are based on the findings from a sample of small businesses and the costs identified as being incurred due to workplace injuries in the twelve months to November 2011. The case study research undertaken in this study also identified that many of the costs incurred because of workplace injuries such as productivity loss or administrative costs may not be fully itemised or recorded by small businesses.

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<sup>1</sup> Previous studies have examined the costs associated with workplace accidents, including accidents involving injuries and those where no injuries were recorded. It should be noted that the present assessment focuses on workplace injuries where businesses reported incidents involving costs.

<sup>2</sup> 'Other Services' refer to service businesses other than retail and hospitality.

<sup>3</sup> The aggregation of the findings from the survey research to the overall population of the four sectors is weighted in order to take into account the proportionate size of each sector. This process is explained in Section 1.2.

Estimated Total Annual Cost of Workplace Injuries and Annual Mean Cost of Workplace Injuries to Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in the 12-Month period to November 2011 - € <sup>4</sup>			
	1 to 9 Employees	10 to 49 Employees	Total
Estimated Annual Total Cost of Workplace Injuries across Four Sectors - €	6,123,614	12,340,737	<b>18,464,350</b>
Estimated Annual Mean Cost to a Small Business across Four Sectors - €	3,065	9,880	<b>9,138</b>

Note: The mean cost figures indicated relate only to businesses that reported workplace injuries that resulted in financial costs to the business during the period under review

Source: Indecon/MBL

Given the small number of incidents of health and safety injuries which have been examined in this study, namely eighty, there is an inevitable question surrounding the overall estimates and much larger sample sizes would greatly increase the confidence in the estimation. However, this would require significant additional resources, which may be something the Health and Safety Authority could consider at some date in the future. However, the estimates provided significantly add to our knowledge and understanding of the overall costs of workplace injuries. This is particularly the case in terms of the overall estimates and also in terms of the broad sectoral estimates. As one moves to smaller sample sizes in disaggregating the overall sample into further categorisations, the confidence, in terms of the representativeness of the numbers, is greatly reduced. This is very evident when examining the wide range of estimates within the sample data.<sup>5</sup>

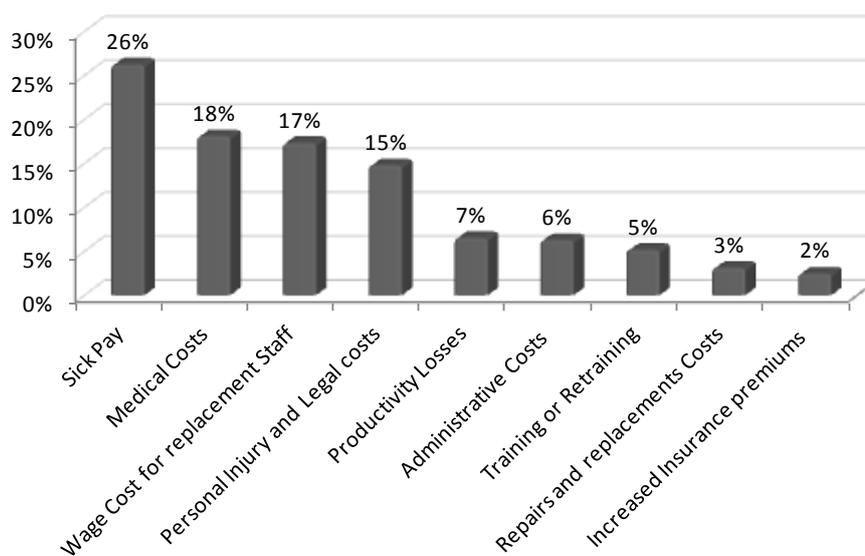
#### Breakdown of costs related to workplace injuries

The figure overleaf describes the breakdown of the total annual costs incurred by small businesses in the sectors profiled. This research has found that the four most significant costs related to workplace injuries for small businesses in these sectors are sick pay (26%), medical costs (18%), wages for replacement staff (17%), and legal costs and compensation (15%). These categories together account for just over three-quarters of overall costs incurred.

<sup>4</sup> 95% Confidence Intervals around the means reported are presented in Annex 3.

<sup>5</sup> Throughout this report, sample data on costs of workplace injuries are presented on the basis of statistical mean averages. We also calculated median costs per business, as medians are influenced less by very small or very large outliers in the sample. In addition, formal confidence intervals around the means for the overall results and at a broad sectoral level were calculated. These confidence intervals are presented and discussed in Section 2 of the main report.

**Percentage Breakdown of Total Costs Incurred Due to Workplace Injuries in Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in the 12-Month period to November 2011 - %**



Source: Indecon/MBL

#### Assessment of sectoral variations in costs related to workplace injuries

The findings from the research suggest that the cost of workplace injuries borne by small businesses varies significantly across the four sectors examined. As the table below indicates, small businesses in the manufacturing sector are estimated to have incurred almost €9.5 million in annual costs. By contrast, it is estimated that small businesses in the 'other services' sector experienced annual total costs of €1.1 million because of workplace injuries.

**Estimated Total Annual Cost of Workplace Injuries to Small Businesses in Ireland by Sector in the 12-Month period to November 2011 - €\***

Sector	Cost - €
Manufacturing	9,487,742
Retail	6,615,653
Hospitality	1,266,988
'Other Services'	1,093,966

\* Note: All figures are based on costs relating to the 12-month period to November 2011.

Source: Indecon/MBL

The table below indicates the range (minimum and maximum) and mean annual reported costs arising from workplace injuries across the four sectors examined. The estimated mean annual cost of workplace injuries for a small business in the manufacturing sector is €28,687, while it is estimated at €2,057 in the 'other services' sector, €1,335 in the hospitality sector and €4,473 for a small business affected in the retail sector. There is a wide range of reported annual costs around the averages/means within each sector.

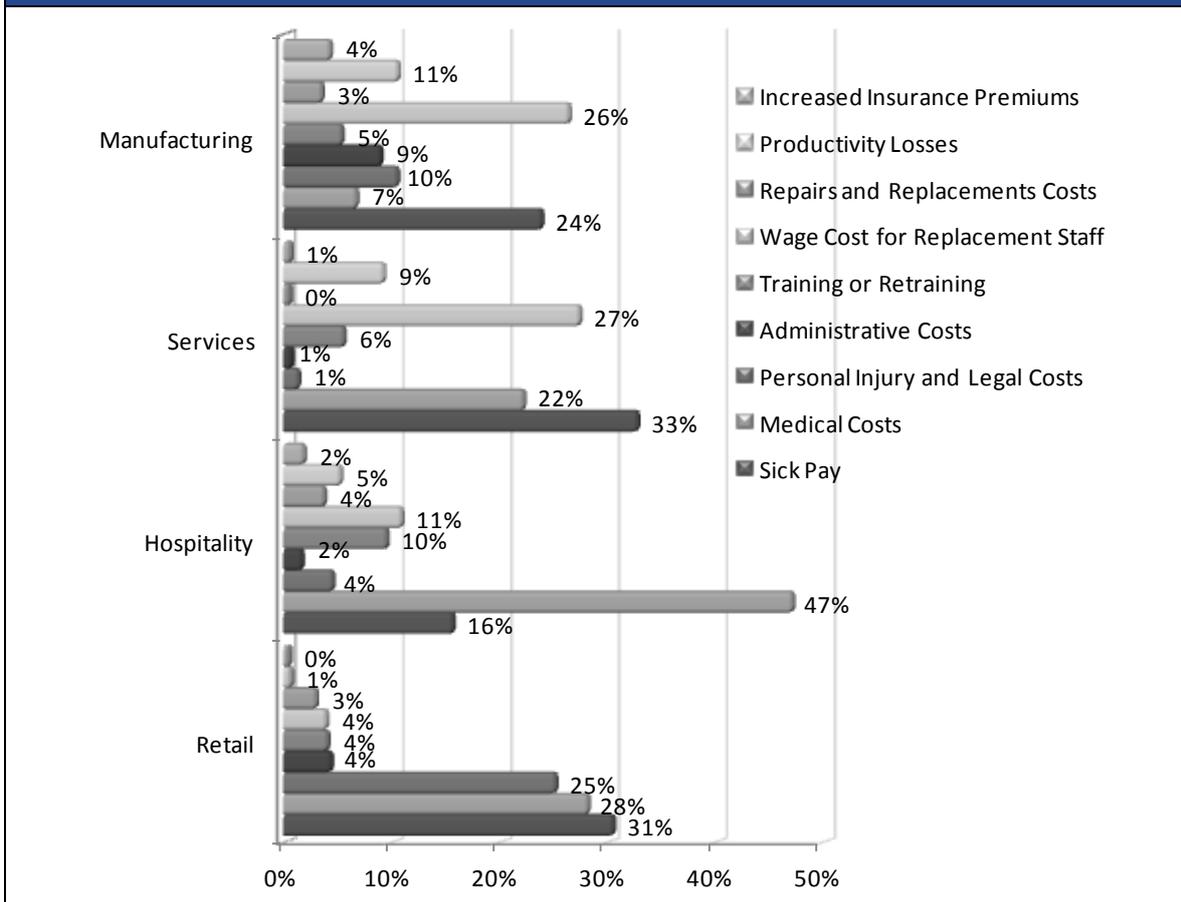
Estimated Annual Costs of Workplace Injuries to Small Businesses in Ireland by Sector in the 12-Month Period to November 2011*			
Sector	Minimum Reported Cost - €	Maximum Reported Cost - €	Mean Annual Cost among Small Businesses in Sector - €
Manufacturing	100	300,000	28,687
Retail	20	25,000	4,473
Hospitality	3	5,000	1,335
'Other Services'	150	10,000	2,057

\* Note: These estimates capture only those companies that incurred costs greater than zero due to workplace injuries. All figures are based on costs relating to the 12-month period to November 2011.

Source: Indecon/MBL

The figure overleaf depicts the percentage breakdown of the total annual costs due to workplace injuries among small businesses in Ireland in each of the sectors examined. The estimates suggest that of the total of €9.48 million in costs incurred by the manufacturing sector during the twelve months to November 2011, 26% related to payments of wages to replace staff affected by a workplace injury, while 24% was in the form of sick pay for the affected members of staff. Overall, 47% of the costs resulting from workplace injuries for small businesses in the hospitality sector are estimated to be medical costs, which include visits to GPs and hospitals.

### Percentage Breakdown of the Total Costs per Sector of Workplace Injuries in Small Business in Ireland in the 12-Month Period to November 2011- %



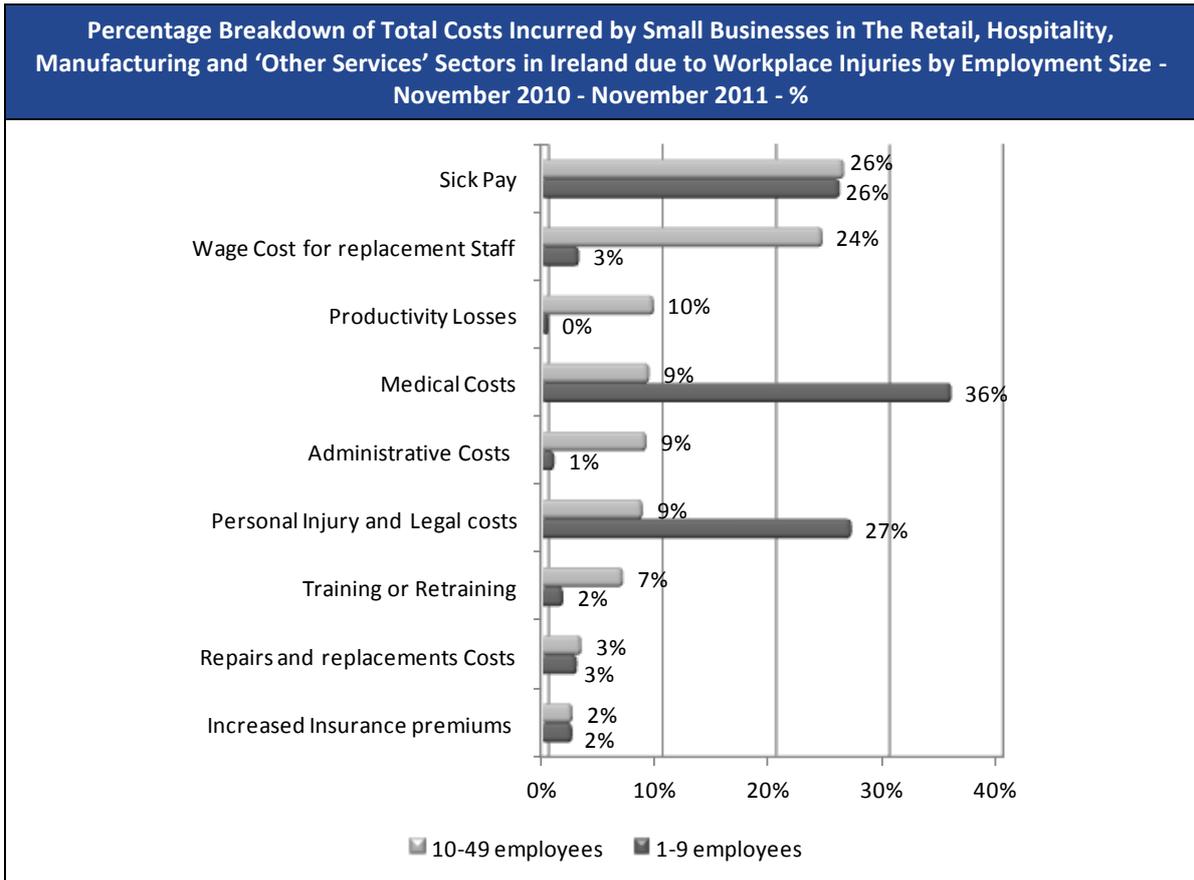
Note: Service category refers to 'other services' excluding retail and hospitality.

Source: Indecon/MBL

#### Assessment of employment size differences in costs related to workplace injuries

This research also assessed the variation in costs incurred because of workplace injuries between businesses with one to nine employees and those employing between 10 and 49 persons. The findings from the research suggest that the costs incurred by employers with one to nine employees are largely made up of medical costs (36%), sick pay (26%) and personal and legal costs (27%). Among larger employers, the main cost areas were sick pay (26%), wages for replacement staff (24%)<sup>6</sup> and productivity loss (10%).

<sup>6</sup> This relates to the net additional cost to a small business of an injury in terms of the cost of replacement staff after accounting for reduction in normal pay and the payment of sick pay to staff affected by injuries.



Source: Indecon/MBL

Case study research

The ten case studies correlated with the findings from the survey data in identifying main costs as sick pay, medical costs and wages to replace affected staff members. It is also evident through examination of the recorded interviews for these case studies that many small businesses are not in a position to quantify some of the costs associated with workplace injuries, such as loss of productivity or retraining, and so the costs may be underestimated.

## Overall Findings and Conclusions

Consistent with best practice in previous studies, this study uses a range of methodologies and approaches to estimate the cost of workplace injuries and work-related illness for small businesses in Ireland. Based on a survey of 809 small businesses in Ireland, this report has found that 31% of businesses employing between 10 and 49 persons and 46% of firms employing between one and nine persons believed that costs incurred due to workplace injuries were either significant or very significant. Approximately 10% of the sample indicated that their company had experienced a workplace injury during the previous twelve months. The total annual cost borne by small businesses due to workplace injuries across the sectors examined was estimated at €18.5 million, with a mean annual cost of €9,138 among businesses that experienced an injury.

This study also analysed the sectoral variations in costs of workplace injuries. The research suggests that the manufacturing sector incurs significantly more costs because of workplace injuries, with total costs of €9.5 million (51% of the estimated overall costs for small businesses across the sectors examined) and a mean annual cost of €28,687 per small business affected.

In terms of specific costs, it is estimated that the highest category of cost borne by small businesses because of workplace injuries experienced across the four sectors is the payment of sick pay to staff affected by an injury, accounting for €4.8 million or over one quarter (26%) of the total costs reported. The next most significant cost is wages for replacement staff, amounting to over €3 million. This study has also found that small businesses with between 10 and 49 employees are estimated to have incurred over €12 million, or 67% of the total costs associated with workplace injuries across the four sectors and over the 12-month period examined.

The research has shown that while most small businesses in Ireland have not experienced workplace injuries in the previous twelve months, the small business sector overall has incurred significant annual costs as a result of workplace injuries. The costs experienced by each of the sectors examined vary, with the manufacturing sector bearing considerably higher costs than retail, hospitality and other services. In terms of the nature of costs experienced, costs related to sick pay, wages for replacement staff and medical costs are the most significant costs borne because of workplace injuries.

## Acknowledgments and Disclaimer

We would like to acknowledge the assistance provided by a number of individuals in the completion of this report. We would like to express our gratitude to Mary Dorgan, Martin O’Dea, Marie Dalton and Paula Gough at the Health and Safety Authority for their guidance and assistance throughout the process. We would also particularly like to thank the large number of businesses and individuals who participated in the interviews and who provided valuable inputs, without which this research would not have been possible. The usual disclaimer applies and the analysis and assessment in this report remain the sole responsibility of Indecon. Indecon are also particularly grateful to an external, independent referee who provided valuable inputs and advice on an earlier draft of this report.



# 1 Introduction, Methodology and Previous Research

This report is submitted to the Health and Safety Authority by Indecon International Economic Consultants. The report concerns an independent assessment of the costs incurred by small businesses in Ireland because of workplace injuries.

## 1.1 Introduction

The aim of this study is to provide an analysis of the costs incurred by small businesses in the retail, hospitality, other services<sup>7</sup> and manufacturing sectors in Ireland because of workplace injuries. The research focuses on the costs to employers/small businesses across these sectors.

This information is required to support and inform the Health and Safety Authority's (HSA) role in promoting the benefits of improved health and safety performance, in particular in relation to small businesses.

### 1.1.1 Terms of reference

The terms of reference for this study are as follows:

- To describe the costs of workplace injuries for small businesses in the following sectors: retail, hospitality, service and manufacturing.
- The analysis for each of the four sectors to be broken down based on size of organisation as follows:
  - 0 to 9 employees
  - 10 to 49 employees
- To include at least 80 injury cases in the analysis.
- The analysis focuses specifically on costs incurred by businesses. These could, for example, include costs associated with:
  - Productivity
  - Staff replacement
  - Equipment
  - Personal injury claims
  - Insurance
  - Reputation
- Key estimates required from the analysis include:
  - Average cost per injury for small businesses in Ireland
  - Average annual cost of injuries to all small businesses in Ireland
  - Average cost per injury for a small business in each of the specified sectors
  - Average annual cost of injuries for each specified sector

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<sup>7</sup> 'Other Services' refer to service businesses other than retail and hospitality.

- Ten case studies should be included, which provide a more detailed account of the wider impacts of the injury on organisations. Case studies should be drawn from a range of sectors and include a variety of injury types.

Various previous studies have attempted to assess the costs of workplace injuries to businesses in Ireland. These have included case study assessments<sup>8</sup> and an assessment of causes and costs of manual handling injuries in the health care sector<sup>9</sup> in 2007. In addition, the Authority compiles detailed statistics on an annual basis on the level and breakdown/composition of fatal and non-fatal workplace accidents. These statistics are based, however, on reported incidents and experience indicates that considerable numbers of workplace accidents are not reported. This results in a significant issue in relation to under-reporting of accidents and injuries, in particular non-fatal injuries. This is an issue also highlighted by the CSO in relation to its data on workplace injuries. While the existing research has provided some indication that the costs associated with workplace accidents place a greater burden on smaller businesses, no comprehensive assessment of these costs has been undertaken to date to substantiate this preliminary finding.

Against this background, this study has developed new estimates based on a larger sample size and specific to an Irish context of the costs of workplace injuries to small businesses. This report aims to support the HSA's prevention role by providing an indication of the financial impact of workplace injuries on small businesses in Ireland, and by providing a context within which costs of compliance with the employer's legal duties can be assessed.

## 1.2 Methodology

Indecon implemented a rigorous methodology based on a four-phased approach designed to ensure that robust assessment was undertaken of the costs to small businesses in Ireland arising from workplace accidents, which is presented in the figure overleaf. A particular feature of this methodology is that it can be repeated on a consistent basis in the future, thereby enabling updates of the database developed by this study.

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<sup>8</sup>School of Food Science and Environmental Health DIT for the Health and safety Authority, 2007, The Costs and Effects of Workplace Accidents – Twenty Case Studies for Ireland.

<sup>9</sup>The Health and safety Authority, 2007, Analysis of the Causes and Costs of Manual Handling Incidents in the Health Care Sector.



Source: Indecon

The approach adopted has enabled Indecon to prepare a rigorous estimation of the costs of work-related accidents to small businesses in Ireland. However, it should be noted that estimates in this area are subject to some uncertainty and the results should be considered as broad indicators of costs borne by small businesses in Ireland.

## 1.2.1 Research Methodology

### Scope of Research

This study on the cost of workplace injuries among small businesses in Ireland focuses on the retail, hospitality, manufacturing and 'other services' sectors. These sectors were chosen by the Health and Safety Authority based on the large proportion of small businesses operating in these sectors.

### Small Business Survey

This report has developed and completed extensive new primary research in order to estimate the annual cost of workplace injuries to small enterprises in Ireland. The table below presents the number of small businesses<sup>10</sup> within each sector in Ireland in 2011. The sample for this survey was extracted from the 89,650 small businesses in Ireland in 2011 in the four sectors and size groupings represented below. A total of 72,682 small enterprises employ between one and nine persons while an additional 16,968 businesses employ between 10 and 49 employees.

Sector	Number of Businesses		
	1 to 9 Employees	10 to 49 Employees	Total
Manufacturing	5,284	2,123	7,407
Retail	20,775	5,923	26,698
Hospitality	16,123	3,001	19,124
Other Services	30,500	5,921	36,421
<b>Total of Above Sectors</b>	<b>72,682</b>	<b>16,968</b>	<b>89,650</b>

Source: Indecon/MBL/Bill Moss Partnership<sup>11</sup>

<sup>10</sup> Excluding the self-employed.

<sup>11</sup> According to The Bill Moss Partnership, in November 2011, there were 99,229 businesses with one to nine employees and 22,697 businesses with 10 to 49 employees, or a total of 121,926 businesses with 1 to 49 employees in Ireland.

## Sampling Approach

From the above population of small businesses in the sectors under examination, a quota-controlled sample size of 809 small businesses was selected and a comprehensive survey of these businesses was undertaken by Millward Brown Lansdowne during November 2011. The overall sample chosen was distributed as per the sector and size categories shown in the table below. The aim of this survey was to achieve a minimum of 80 injury cases across responding businesses over the previous twelve-month period (year to November 2011). It was estimated that this would be achieved by a sample of 100 in each sector-size sub-group.<sup>12</sup> Indecon recognises that while quota sampling was the only practical approach for this study, this can have serious limitations. This would apply if the characteristics indicated by the quota sampling did not accurately reflect the population from which it is drawn. It is not possible for the degree to which they may diverge to be estimated. However, well-selected quota samples can deliver accurate results. Because of budget constraints, the HSA set a target of 80 injury cases for this research. Clearly when this is broken down across the four sectors, the sample sizes at sector level are inevitably small and sampling variances can be large.<sup>13</sup> Reflecting this, caution must be exercised in interpreting the results. As the survey approach involved contacting a sufficient number of companies to achieve the sample quota set, there was no issue with non-responses as such to the detailed survey. Indecon, however, accepts the probability of sampling bias in any such quota-based surveys.

<b>Sector</b>	<b>Employment Size</b>	<b>Sample Size – No. of Businesses Interviewed</b>
Manufacturing	1 to 9 Employees	100
Manufacturing	10 to 49 Employees	100
Retail	1 to 9 Employees	106
Retail	10 to 49 Employees	100
Hospitality	1 to 9 Employees	102
Hospitality	10 to 49 Employees	100
Other Services	1 to 9 Employees	100
Other Services	10 to 49 Employees	101
<b>Total</b>		<b>809</b>

Source: Indecon/MBL

<sup>12</sup> When the initial 800 interviews were completed, 78 respondents had been identified. In order to achieve the target of 80 respondents all quotas were opened and interviewing continued resulting in some quotas exceeding the original sample size set.

<sup>13</sup> This is evident from the wide range in costs between minimum and maximum, and from comparison of the difference between the mean and median results.

### Research questionnaire

This questionnaire used to support the core research interviews contained twenty-one questions, which sought details in relation to the composition of each business, the incidence of workplace injuries, the number of staff affected by a workplace injury, resulting closure(s), disruption and days lost in the previous twelve months. In addition, twelve questions related specifically to the costs incurred by businesses affected by workplace injuries. The research also included questions relating to the breakdown of costs for each business surveyed. Each business was asked to indicate what proportion of the total costs incurred in the 12 months to November 2011 was attributed to the following categories:

- Sick Pay;
- Wage/Salary Costs for Replacement Staff;
- Training or Retraining;
- Productivity Losses;
- Administrative Costs;
- Repairs and Replacement Costs;
- Medical costs, Hospitals, GP visits;
- Compensation/Personal Injury and Legal Costs;
- Increased Insurance Premiums; and
- Any Other Costs.

A copy of the questionnaire used for the core interviews is presented in Annex 1.

### Methodology for Estimation of Workplace Injuries and Costs at Population Level

This survey was based on a total population of 89,650 businesses within the four sectors. A sample of 809 businesses formed the basis for the estimates presented in this report. These businesses were surveyed from the population of firms in these sectors and within the relevant employment size categories (1 to 9 and 10 to 49 employees) and the findings were aggregated, taking into account the proportionate size of each sector. To estimate the *number* of workplace injuries for each sector and size category, we apply the following formula to the sample data returned for each sector and employment size category.

$$\begin{aligned} & \textit{Estimated Total Number of Workplace Injuries} \\ & = (\textit{Population Size} \div \textit{Sample Size}) \times (\textit{Sample Total Number of Workplace Injuries}) \end{aligned}$$

The following formula was applied to estimate the *cost* of workplace injuries across all small businesses in each sector:

$$\begin{aligned} & \textit{Estimated Total Sectoral Cost of Workplace Injuries} \\ & = (\textit{Population Size} \div \textit{Sample Size}) \times (\textit{Sample Total Cost of Injuries}) \end{aligned}$$

An example of the application of the above formulae for aggregating the data to population level is presented in the table below by reference to the hospitality sector. This method takes into account the relative size of the businesses in the two categories which would be a determinant of the likelihood of an accident occurring.

<b>Table 1.3: Approach to Aggregation of Sample Data to Estimate Number of Workplace Injuries and Cost of Injuries – Example of Hospitality Sector</b>			
	<b>1-9 employees</b>	<b>10-49 employees</b>	<b>Total</b>
Population Size – No. of Businesses Sector	16,123	3,001	19,124
Sample Size – No. of Businesses	102	100	202
Population / Sample Size	158.0686	30.010	
Sample-reported No. of Workplace Injuries	13	177	
Estimated Total No. of Workplace Injuries - All Businesses in Sector	2,055	5,312	7,367
Sample-reported Total Cost of Injuries to businesses	3,540	23,573	
Estimated Total Cost of Injuries - All Businesses in Sector	559,563	707,426	1,266,988

Source: Indecon

It should be noted that the cost of workplace injuries recorded in this study are those costs recalled by the interviewees in response to the questionnaire. Businesses may have under-reported/understated costs in some cases.

### Case Studies Field Work

As part of the research undertaken, a number of businesses interviewed as part of the core research were asked to take part in follow-up in-depth interviews in relation to their experience with specific injury cases, which occurred among their staff. These interviews formed the basis for the inclusion of eleven detailed case studies on the impact of workplace injuries in the four sectors included in this study. These case studies, which are presented in Section 3 of this report, provide a valuable insight into the typical costs faced by businesses due to workplace injuries. Intensive efforts were made to include detail on the nature of the injuries and their causes as this adds richness to the research. However, in so doing, caution was exercised to ensure anonymity due to the possible risk of specific actual cases being identified.<sup>14</sup> The case studies presented in this report reflect the language used by the company/business when reporting on the accident.

<sup>14</sup> The content of each case study should also not be interpreted in any way as pointing to responsibility for workplace injuries on the part of the employee or the business concerned.

## 1.3 Review of Previous Research

As part of this research, Indecon examined a range of previous studies on the cost of workplace injuries and ill health. Some previous studies estimating the costs of workplace injuries and/or ill health were undertaken to provide context for employers, employees and Governments. These studies have frequently relied on data from national or private health insurance organisations on payment of claims and national statistics on the number of working days lost, resulting amount of disability pensions awarded, or the cost of health care. These statistics are often incomplete as many incidents are unreported and many costs are not recorded as related to the workplace accident directly. Many previous studies did not take into account the importance of providing costs in relation to different categories of business.

### 1.3.1 Review of international research

International research in this area includes estimates from the International Labour Organisation (ILO) which suggest that approximately 337 million workplace accidents occur annually resulting in extended absences from work. The ILO indicate that *“the economic cost of working days lost, medical treatment and cash benefits paid out is estimated at 4 per cent of global GDP each year.”*<sup>15</sup> According to the European Agency for Safety and Health at Work (1997), the cost of all work-related accidents and diseases can range from 2.6% to 3.8% of Gross Domestic Product (GDP).<sup>16</sup>

The Health and Safety Executive (HSE) in the UK produced estimates of the costs to Britain of workplace accidents and work-related ill health in 1990. This research estimated the costs to the individual, employer and to society as a whole and the unit cost associated with an individual workplace injury or new case of ill health. These estimates were updated in 1995/1996 and 2001/2002. In 2011 the UK HSE published a new report *‘The costs to Britain of workplace injuries and work-related ill health in 2006/07’*<sup>17</sup> which presents an updated method for estimating the ‘costs to Britain’ of workplace injuries and work-related ill health. This report found that the cost to employers was estimated to be between £3 billion and £3.2 billion in 2006 prices, with a central estimate of £3.1 billion<sup>18</sup>. Of the total costs, the most significant element was £1.1 billion for sick pay and £1.6 billion for insurance premiums. The median annual cost to a small business was estimated at £17,700 for major injuries (over three days off work) or £240 for minor injuries (fewer than three days off work).

Rauner et al.<sup>19</sup> published the first detailed analysis of the total direct and indirect costs of individual occupational injury claims for a given year covering costs for a general injury insurance company, the AUVA, employers and the Austrian economy. This study calculated the total lifetime costs for each individual claim to the insurance company, employers, and the economy. In addition, the cost-effectiveness thresholds for prevention program costs per injury for certain risk

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<sup>15</sup> International Labour Organisation, 2010, [http://www.ilo.org/global/about-the-ilo/press-and-media-centre/news/WCMS\\_126383/lang--en/index.htm](http://www.ilo.org/global/about-the-ilo/press-and-media-centre/news/WCMS_126383/lang--en/index.htm)

<sup>16</sup> European Agency for Safety and Health at Work, 1997, *Economic Impact of Occupational Safety and Health in the Member States of the European Union*.

<sup>17</sup> HSE (Risk Solutions), 2011, *The Costs to Britain of workplace injuries and work-related ill health in 2006/07*.

<sup>18</sup> Note that this relates to the cost to employers. The HSE report also estimated the costs to society as a whole at between £14.5 billion and £18.2 billion in 2006 prices (based on a 90% confidence interval), with a central estimate of £16.3 billion. These estimates (and not the employer-related cost estimates) are more comparable with the findings from Indecon’s research conducted in 2006, which estimates the costs of Irish workplace accidents and ill health at between €3.3 billion and €3.6 billion per annum (see further below).

<sup>19</sup> Rauner, M., Harper, P., & Schwarz, B., 2005, *Economic Impact of Occupational Accidents: Resource Allocation for AUVA’s Prevention Programs*.

groups were analysed. This study found total lifetime costs (discounted at 3%) of €543 million for AUVA (Austrian Social Insurance for Occupational Risks), €228 million for employers and €927 million for the economy - a total cost of €1,699 million.

The European Commission published a study in 2004<sup>20</sup> that analysed the socio-economic costs of accidents at work in the 15 European Union countries. This report utilised the European Statistics on Accidents at Work (ESAW) database covering the 15 Member States for fatal accidents at work and non-fatal accidents at work with more than three days lost. A questionnaire survey was also used to assess the various direct and indirect costs of accidents at work from the point of view of the company and the victim. This study includes analysis of the number of accidents and number of accidents with reported costs by company size but it does not present the cost of workplace accidents by company size. In November 2011 the European Commission published an updated study, the '*Socio-economic costs of accidents at work and work-related ill health*'<sup>21</sup> which evaluates the costs of accidents at work and work-related ill health and aims to demonstrate the additional benefit to businesses in developing effective health and safety policies. This study included desk research and primary research based on case studies. This study found that accidents at work and work-related ill health result in considerable costs to the employer, including a median cost of €1,651.54 for a single accident at work or a mild work-related illness; a cost of €4,985.9 for a medium severity work-related illness; and €11,661.69 for a serious work-related illness. In discussing the findings from the primary research with companies, it was stated that:

"Calculating the actual costs proved to be convincing (for companies) and although results did not always indicate large sums, they still were eye-openers. The study did reveal that the costs are mostly underestimated and that it is useful practice to calculate costs."

### 1.3.2 Review of Irish research

The HSA has commissioned a number of studies on accidents at work including a study to estimate the cost of workplace accidents to employers and employees in high-risk sectors<sup>22</sup> in 2004 based on a survey of employers and employees that reported a common type of accident. The sectors examined were Construction, Agriculture, Hunting, Forestry, Mines and Quarries. This study found that these sectors spent a total of €21,384,384 in Ireland for 2002 due to workplace accidents. The average cost per sector varied widely: a cost of €17,138 per workplace accident in the Construction sector; €8,725 for Mines and Quarries; and €1,969 for Agriculture and Forestry. The high cost in the Construction sector was largely attributed to increases in insurance costs and compensation paid to the injured member of staff. The Agriculture and Forestry sectors had the lowest reported costs with wages paid to the employee unable to work due to an injury as the primary contributor to costs.

<sup>20</sup> European Commission, Directorate General of Employment, Social Affairs and Inclusion, 2004, *Statistical Analysis of Socio-Economic Costs of Accidents at Work in the European Union*.

<sup>21</sup> European Commission, Directorate General of Employment, Social Affairs and Inclusion, 2011, *Socio-economic costs of accidents at work and work-related ill health*.

<sup>22</sup> Health and Safety Authority, 2004, *An Assessment of the Cost of Reported Accidents in High-risk Workplaces*.

In addition, in 2007, the HSA commissioned a study featuring twenty case studies of accidents at work aiming to highlight for employees and employers, the financial, physical and psychological effects of a workplace injury.<sup>23</sup> These case studies indicated a wide range of negative costs and effects as a result of workplace accidents. Costs to employers from the accidents included salary costs for replacement staff, overtime payments, production and productivity losses, retraining costs, personal injury claim compensation, repair bills, medical and travel expenses and increased supervision. Salary costs were the largest cost category accounting for 45% of the total costs. It is also notable that 40% of the more serious accidents described in the case studies resulted in personal injury claims, with three compensation awards amounting to approximately €30,000 and one award totaling €152,000.

Indecon also completed a study for the Department of Jobs, Enterprise and Innovation<sup>24</sup> (then the Department of Enterprise Trade and Employment) on the economic impact of the Safety, Health and Welfare at Work Legislation. Part of this report involved estimating the costs of accidents and ill health to the Irish economy using existing Indecon data (CSO and HSA), previous research, a detailed consultation programme, econometric analysis, a general survey of industry and a specific survey of the construction sector. The Indecon (2006) report estimated the cost of Irish workplace accidents and ill health at between €3.3 billion (2.5% of GNP in 2005) and €3.6 billion per annum.

The HSA also commissioned Dr. Ziene Mottiar in 2004 to undertake a '*Feasibility Study on Estimation of Costs of Workplace Accidents, work-related ill health and non-injury incidents in Ireland*'. In terms of the cost to employers from workplace injuries this report suggested seven categories of costs, as follows:

1. Cost of absence;
2. Administration;
3. Recruitment;
4. Damage;
5. Non-injury accidents;
6. Compensation and insurance; and
7. Costs of preventive activities.

A number of these categories have been utilised in this study to estimate the costs of workplace injuries to small businesses in Ireland.

### 1.3.3 Summary of findings from previous studies

International and national studies to estimate the cost of workplace injuries have used various methods to itemise the impacts and costs to the employer, employee and society as a whole. The ability to correctly and comprehensively account for the costs associated with workplace injuries remains dependent on reporting of incidents. These international and national studies have used various methodologies and have focused on different costs/impacts. The previous studies suggest a wide range of estimates of the costs borne due to workplace injuries and work-related illness as illustrated in Table 1.4. There are also differences in definition applied across the studies examined. However, all studies agree that workplace injuries and work-related ill health result in significant costs, and these costs are often underestimated.

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<sup>23</sup>Mr. Victor Hrymak & Dr Jose Damian Pérezgonzález, a report for the Health and Safety Authority, 2007, *The Costs and Effects of Workplace Accidents: Twenty Case Studies from Ireland*.

<sup>24</sup>Indecon, 2006, *Report on Economic Impact of the Safety, Health and Welfare at Work Legislation*.

**Table 1.4: Summary of Findings from Previous Studies on the Cost of Workplace Injuries and Work-Related Illness**

	Total Cost to Society	Total Cost to Employer/Business	Average Cost per Injury
Health and Safety Executive – UK (2011) <sup>25</sup>	£16.5 billion (2006) (costs to individuals, employers and government)	£3.1 billion (2006)	£17,700 (major) - £240 (minor) (Societal costs)
Rauner et al. – Austria (2005) <sup>26</sup>	€1.7 billion (lifetime costs discounted at 3%)	€228 million	-
European Commission (2011) <sup>27</sup>		€1,652 per injury	-
European Agency for Safety and Health at Work (1997) <sup>28</sup>	2.6% to 3.8% of GDP	-	-
Health and Safety Authority – Ireland (high-risk sectors- construction, agriculture, hunting, forestry, mines and quarries) 2004 <sup>29</sup>	-	€21.4 million (2002)	€17,138 - €1,969
Indecon (2006) – Ireland <sup>30</sup>	€3.3 - €3.6 billion (2005)	-	-

Source: *Indecon analysis of research*

It is important to note that the focus of the current study is not on the costs to society of workplace injuries but on the more targeted issue of the direct costs to small businesses/employers.

## 1.4 Structure of Report

The remainder of this report is outlined as follows: Section 2 presents an assessment of the cost of workplace injuries to small businesses in the manufacturing, hospitality, retail and other services sectors. This assessment is focused on the incidences of accidents, the associated cost and the perceived significance of workplace injuries. Section 3 examines the cost of workplace injuries by sector in more detail and Section 4 presents our conclusions of the assessment. Finally, the detailed research questionnaires for this study are presented in the Annex to this report.

<sup>25</sup> Source: Health and Safety Executive UK (2011) 'The Costs to Britain of Workplace Injuries and work-related ill health in 2006/07.

<sup>26</sup> Rauner, S. Marion, Harper, R. Paul & Schwarz, Bernhard (2005) 'Economic Impact of Occupational Injuries: resource allocation for prevention programs'.

<sup>27</sup> European Commission (2011), Op. Cit.

<sup>28</sup> European Agency for Safety and Health at Work (1997), Op. Cit.

<sup>29</sup> Health and Safety Authority Ireland (2004) 'An Assessment of the Cost of Reported Accidents in High-risk Workplaces.

<sup>30</sup> Indecon (2006), Op. Cit.

## 1.5 Acknowledgments and Disclaimer

We would like to acknowledge the assistance provided by a number of individuals in the completion of this report. We would like to express our gratitude to Mary Dorgan, Martin O’Dea, Marie Dalton and Paula Gough at the Health and Safety Authority for their guidance and assistance throughout the process. We would also particularly like to thank the large number of businesses and individuals who participated in the interviews and who provided valuable inputs, without which this research would not have been possible. The usual disclaimer applies and the analysis and assessment in this report remain the sole responsibility of Indecon.

## 2 Assessment of Cost of Workplace Injuries to Small Businesses

Based on our dedicated survey of 809 small businesses this section presents the estimated costs of workplace injuries borne by four sectors of small businesses in the 12-month period. The average cost per injury and the breakdown of these costs are also provided.

### 2.1 Incidence of Workplace Injuries

This subsection presents an outline of existing data on the number of workplace injuries in small enterprises in Ireland. The data reported by the HSA relates to all workplace injuries that resulted in three or more days absence from work. The findings from the small business survey undertaken for this report are also presented.

#### 2.1.1 HSA data

The HSA collects data for injuries resulting in three or more days' absence from work. The data for 2010 and 2011 showing the number of workplace injuries for small businesses is presented in the table below. The HSA figures indicate that 2,118 workplace injuries involving three or more days' absence occurred in 2011 (excluding the day of the accident); businesses employing 10 to 49 persons incurred 1,495 of these workplace injuries or over 70% of the total reported workplace injuries amongst small employers.<sup>31</sup>

<b>Company Employee Size</b>	<b>2010</b>	<b>% of Total Below 50 Employees</b>	<b>2011</b>	<b>% of Total Below 50 Employees</b>
1 to 9 employees	728	30%	623	29.4%
10 to 49 employees	1,675	70%	1,495	70.6%
<b>Total below 50 employees</b>	<b>2,404</b>		<b>2,118</b>	

Source: Indecon analysis based on data from HSA - Summary of Workplace Injury Illness and Fatality Statistics 2009/2010 and 2010/2011

#### 2.1.2 Findings from Current Research

The estimates of the overall number of workplace injuries reported by business size across the four sectors examined in this report are presented in the table overleaf. This also indicates the number of injuries where costs were experienced by the businesses affected. The estimates are based on aggregating the proportion of small businesses found to have experienced an injury within the overall sample of 809 small businesses surveyed to the total number of small businesses in these sectors in Ireland.

<sup>31</sup> Caution should be exercised in the interpretation of these figures, which are subject to under-reporting of accidents, particularly in smaller organisations.

**Table 2.2: Estimated Number of Workplace Injuries in Small Business in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in 12-Month Period to November 2011\***

	<b>1 to 9 Employees</b>	<b>10 to 49 Employees</b>	<b>Total</b>
Estimated Number of Workplace Injuries Experienced	6,039	8,908	<b>14,947</b>

*Source: Indecon/MBL*

\* Note: Figures include all injuries reported by businesses, including injuries involving less than 3 days absence and injuries where no costs were recorded.

Based on the survey data, it is estimated that staff working for small businesses in Ireland were absent for a total of 40,500 days in the 12 months to November 2011 due to workplace injuries (see table below). Sixty-four per cent of the total days absent due to workplace injuries are within businesses that employ between 10 and 49 employees.

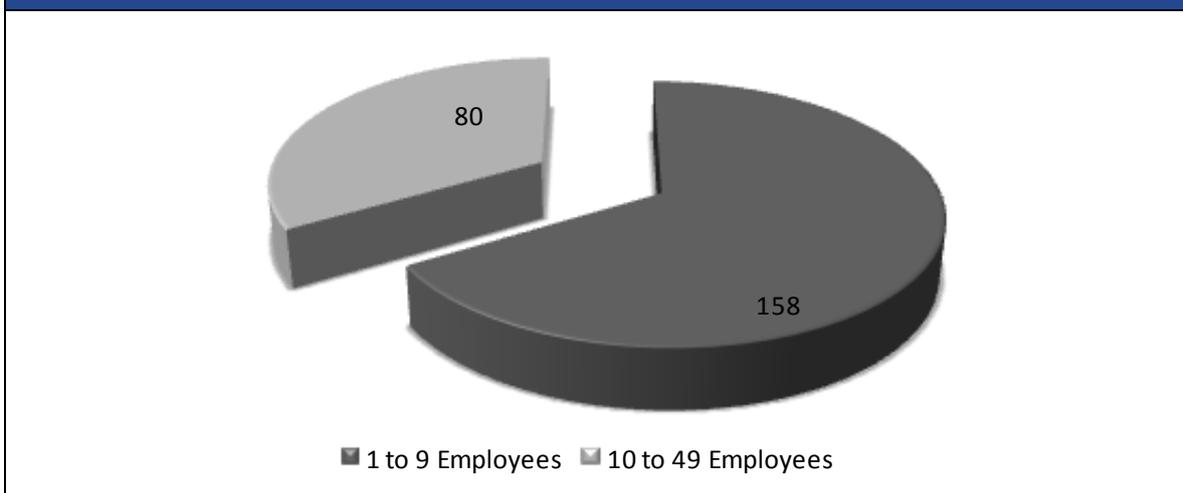
**Table 2.3: Estimated Number of Days of Absence by Staff Due to Workplace Injuries in Small Business in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in 12-Month Period to November 2011**

	<b>1 to 9 Employees</b>	<b>10 to 49 Employees</b>	<b>Total</b>
Estimated Number of Days Lost	14,697	25,803	<b>40,500</b>

*Source: Indecon/MBL*

Small businesses in Ireland are estimated to have had to close down 239 times due to workplace injuries in the 12 months to November 2011. Smaller employers (one to nine employees) reported a greater incidence of temporary closures (158 times) due to these incidents, when compared to businesses with 10 to 49 employees (80 times) (see figure overleaf). This is not surprising given that injuries in very small firms are more likely to affect day-to-day operations.

**Figure 2.1: Estimated Number of Times Small Businesses Closed Down Temporarily due to Workplace Injuries in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors Ireland in 12-Month Period to November 2011**



Source: Indecon/MBL

## 2.2 Cost of Injuries to Workplace

This section presents monetary estimates of the annual costs to employers of workplace injuries in small firms in four sectors in Ireland. The estimated costs per injury are outlined and the overall costs of injuries borne by small businesses in Ireland in the 12 months to November 2011 are also presented. In addition, a breakdown of the costs incurred is also provided and a comparison of the two business groups, i.e. businesses with one to nine employees and businesses with 10 to 49 employees. Among the sample of 809 businesses in the four sectors, 10% of these incurred costs because of workplace injuries.

### 2.2.1 Annual cost of workplace injuries to a small business

The mean annual cost of workplace injuries to a small business in the 12 months to November 2011 is estimated to be €9,138. As the table below demonstrates, the estimated costs are higher for larger businesses (employing 10 to 49 persons) than for smaller businesses that employ between one and nine persons.

**Table 2.4: Estimated Average Annual Cost to a Small Business in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in 12-Month Period to November 2011**

	1 to 9 Employees - €	10 to 49 Employees - €	Total (Mean) - €
Estimated Annual Mean Cost of Workplace Injury	3,065	9,880	9,138

Source: Indecon/MBL

### 2.2.2 Annual cost of workplace injuries

Based on aggregating the results we estimate that the annual direct cost of workplace injuries to small businesses in Ireland is €18.5 million. As is evident from the table below this cost is higher for larger businesses than for those with one to nine employees.

<b>Table 2.5: Estimated Annual Cost of Workplace Injuries to Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in 12-Month Period to November 2011 - €</b>			
	<b>1 to 9 Employees</b>	<b>10 to 49 Employees</b>	<b>Total</b>
Estimated Annual Cost of Workplace Injuries	6,123,614	12,340,737	<b>18,464,350</b>

Source: Indecon/MBL

#### **Breakdown of annual costs**

The table below provides a breakdown of the estimated costs incurred by small businesses in Ireland due to workplace injuries. In the 12 months to November 2011, €4.8 million was paid in sick pay, €3.3 million in medical costs including visits to GPs and hospitals, and small businesses in Ireland paid a further €3.2 million in wages to replace staff affected by workplace injuries.

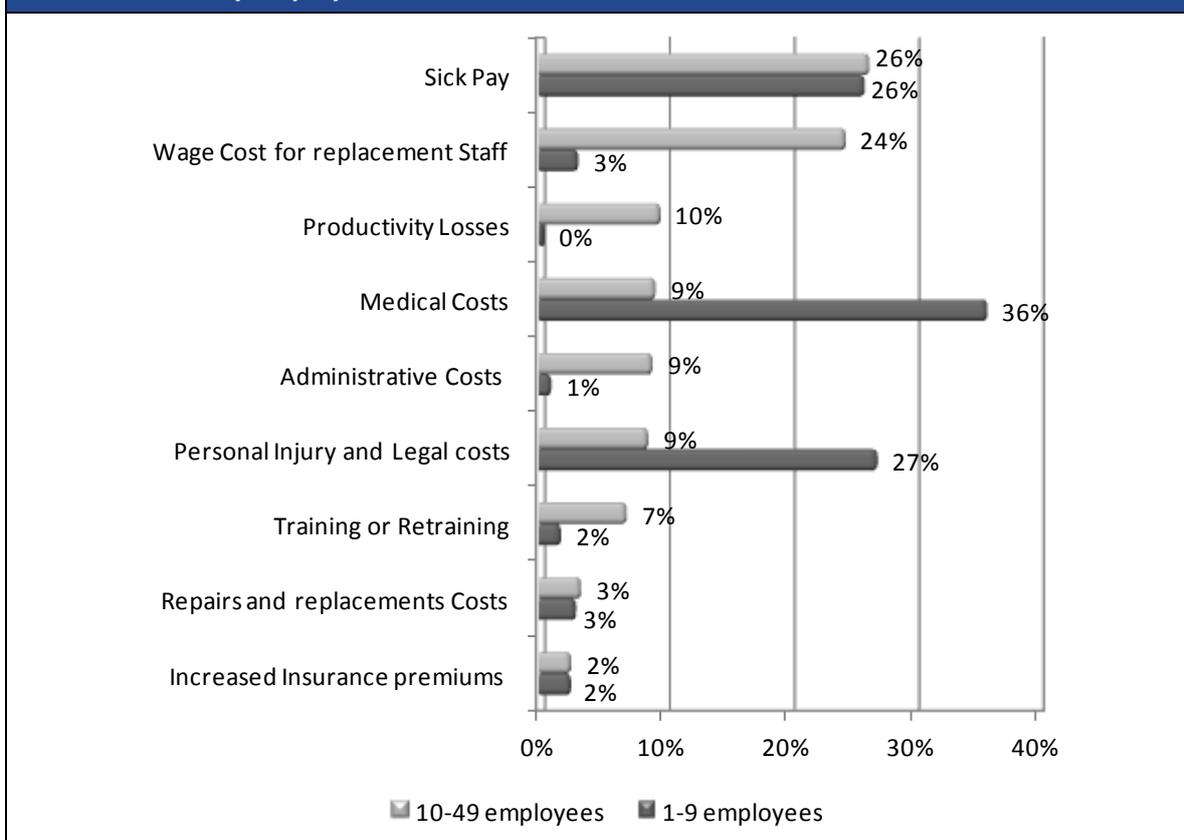
<b>Table 2.6: Estimated Annual Costs Incurred Due to Workplace Injuries in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Small Businesses in Ireland in 12-Month Period to November 2011 - €</b>					
<b>Cost</b>	<b>1 to 9 Employees</b>	<b>% of Total Cost 1-9 Employees</b>	<b>10 to 49 Employees</b>	<b>% of Total Cost 10-49 Employees</b>	<b>Total</b>
Sick Pay	1,592,450	26%	3,250,928	26%	<b>4,820,536</b>
Medical Costs	2,194,020	36%	1,130,757	9%	<b>3,323,483</b>
Wage Cost for replacement Staff*	185,810	3%	30,020,198	24%	<b>3,182,800</b>
Personal Injury and Legal costs	1,655,611	27%	1,071,172	9%	<b>2,714,813</b>
Productivity Losses	16,917	0%	1,189,287	10%	<b>1,196,999</b>
Administrative Costs	52,965	1%	1,112,455	9%	<b>1,153,755</b>
Training or Retraining	100,830	2%	856,681	7%	<b>948,363</b>
Repairs and replacements Costs	174,962	3%	403,801	3%	<b>573,686</b>
Increased Insurance premiums	150,049	2%	305,459	2%	<b>452,032</b>
<b>Estimated Total Cost of Workplace Injuries</b>	<b>6,123,614</b>		<b>12,340,737</b>		<b>18,464,350</b>

Source: Indecon/MBL

\* This relates to the net additional cost to a small business of an injury in terms of the cost of replacement staff after accounting for reduction in normal pay and the payment of sick pay to staff affected by injuries.

The percentage breakdown of total costs due to workplace injuries is presented for businesses with one to nine employees and 10 to 49 employees in the figure below. Larger employers' costs are comprised of sick pay (26%), wages to replace staff affected (24%), productivity losses (10%) and medical costs, administrative costs and personal injury and legal costs (9% each) and smaller employers' (one to nine employees) costs include medical costs (36%), personal injury and legal costs (27%) and sick pay (26%).

**Figure 2.2: Percentage Breakdown of Total Costs Incurred by Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland due to Workplace Injuries by Employment Size in 12-Month Period to November 2011 - %**



Source: Indecon/MBL

### 2.3 Perceived Significance of Workplace Injuries

When small businesses were asked how significant they believed costs incurred by small businesses from workplace injuries to be, 31% of businesses employing between 10 and 49 persons believed that costs incurred were significant or very significant (see table below). This compares with 46% of smaller businesses (employing between one and nine persons) who stated that costs of injuries were very significant or significant.

**Table 2.7: Perceived Significance of Costs from Workplace Injuries to Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland in 12-Month Period to November 2011**

Rating	1 to 9 Employees	10 to 49 Employees
Very Significant	23%	4%
Significant	23%	27%
Neither Significant nor Insignificant	18%	24%
Insignificant	25%	32%
Very Insignificant	11%	13%

Source: Indecon/MBL

### 2.4 Summary of Findings

This section presented the findings from the research in relation to the estimated annual costs of workplace injuries borne by small businesses across the four sectors examined. The key findings were as follows:

- The HSA collects data for injuries resulting in three or more days of absence from work (excluding the day of the accident). Based on the sample research undertaken in this study, the evidence suggests that an estimated 14,947 workplace injuries occurred in small businesses across the four sectors examined in the previous 12-month period (year to November 2011);
- It is estimated that staff working for small businesses across the sectors profiled were absent for a total of 40,500 days in the previous twelve months due to workplace injuries. Businesses employing between 10 and 49 persons accounted for 64% of the total days of staff absence due to workplace injuries across the four sectors;
- The research also estimates that within the sample of small businesses in the sectors profiled, businesses collectively had to close on a temporary basis 238 times due to workplace injuries experienced in the previous twelve-month period. Smaller employers (one to nine employees) had to close more often (158 times) due to these incidents when compared to businesses with 10 to 49 employees (80 times);

- ❑ The mean annual overall costs experienced by small businesses because of workplace injuries in the sectors examined was estimated at €9,138 per business that experienced an injury;
- ❑ The research indicates that the estimated overall cost of workplace injuries to small businesses across the four sectors profiled was €18.5 million in the year to November 2011. Of this, an estimated €12.3 million was sustained by businesses employing between 10 and 49 persons, while €6.1 million was attributed to firms employing one to nine persons;
- ❑ Of the overall estimated annual cost of workplace injuries across the four sectors, €4.8 million related to sick pay, €3.3 million concerned medical costs (including visits to GPs and hospitals) and a further €3.2 million related to the cost of wages to replace staff affected by workplace injuries; and
- ❑ 31% of businesses employing between 10 and 49 persons and 46% of firms employing between one and nine persons believed that costs incurred due to workplace injuries were either significant or very significant.

### 3 Assessment of Cost of Workplace Injuries by Sector

This section presents the findings in relation to the incidents and costs of workplace injuries in small business in Ireland by the four distinct sectors, namely, retail, services, hospitality and manufacturing. Each subsection outlines the average cost per injury and annual cost to businesses and a breakdown of these costs by each sector. A case study is also provided within each sector to illustrate the impact and costs of workplace injuries to a small business in Ireland.

#### 3.1 Assessment of the Retail Sector

This subsection outlines the estimated costs of workplace injuries amongst small businesses in the retail sector in Ireland in the 12-month period. The average cost per injury and annual cost to businesses are outlined, while a breakdown of these costs is also provided. In addition, two case studies on a small business in the retail sector are also included, which details the costs of workplace injuries to this employer.

##### 3.1.1 Incidence of workplace injuries in the retail sector

The data suggests that 8% of small businesses in the retail sector in Ireland experienced a workplace injury in the twelve months to November 2011.

Table 3.1: Percentage of Small Businesses in the Retail Sector in Ireland Affected by a Workplace Injury in the 12-Month Period to November 2011	
	Average
Percentage of Small Businesses Affected by Workplace Injury	8%

Source: Indecon/MBL

Of the 8% of small businesses within the retail sector affected by a workplace injury, it is estimated that 3,204 workplace injuries were experienced in these firms. The data also suggests that staff working within small businesses in the retail sector were absent for a total of 12,562 days in the twelve months to November 2011 due to workplace injuries (table below).

Table 3.2: Estimated Number of Days of Absence by Staff Due to Workplace Injuries in Small Business in the Retail Sector in Ireland in the 12-Month Period to November 2011	
	Total
Estimated Number of Days Lost	12,562

Source: Indecon/MBL

### 3.1.2 Cost of workplace injuries to the retail sector

This section presents monetary estimates of the costs to employers of workplace injury in the twelve-month period to November 2011. The estimated costs per injury borne by small businesses within the retail sector are outlined along with the overall costs incurred by this sector.

#### **Annual average costs to a small business in the sector**

Of the small businesses in the retail sector that incurred costs because of workplace injuries, the table below indicates that the estimated annual average (mean) cost to a small business in this sector is €4,473 per business who experienced an injury (based on injuries over the period November 2010 to November 2011). Of the businesses in this sector that experienced financial costs because of workplace injuries, there was a wide variation in the annual costs incurred, with the lowest annual cost reported at €20 and the highest annual cost estimated to be €25,000 for a small business in this sector.<sup>32</sup>

<b>Table 3.3: Estimated Annual Average and Range of Reported Costs Incurred by Small Businesses in the Retail Sector in Ireland in the 12-Month Period to November 2011 - €</b>			
	<b>Minimum of Reported Costs</b>	<b>Maximum of Reported Costs</b>	<b>Average (Mean) of Reported Costs</b>
Estimated Annual Cost to a Small Business in the Sector - €	20	25,000	4,473

*Note: These estimates relate only to those companies that incurred accident/injury costs.*

*Source: Indecon/MBL*

#### **Annual total cost of workplace injuries across all small businesses in sector**

Based on the costs reported over the 12-month period to November 2011, the total estimated cost of workplace injuries to all small businesses in the retail sector in Ireland was just over €6.6 million (see table below).

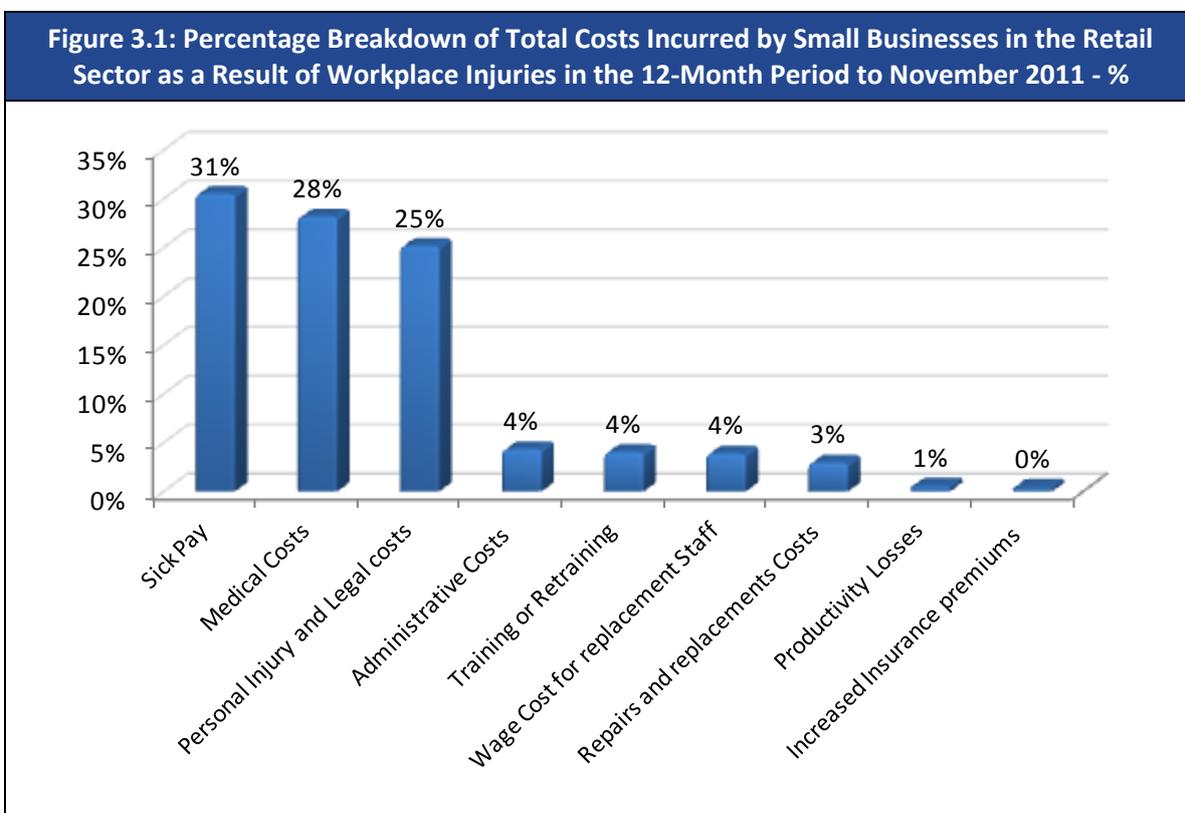
<b>Table 3.4: Estimated Annual Total Cost of Workplace Injuries to Small Businesses in the Retail Sector in Ireland in the 12-Month Period to November 2011- €</b>	
	<b>Total</b>
Estimated Annual Cost of Workplace Injuries to All Small Businesses in Sector - €	6,615,653

*Source: Indecon/MBL*

<sup>32</sup> Confidence intervals around the mean are calculated and presented in Annex 3.

**Breakdown of annual costs of workplace injuries**

The percentage breakdown of the total costs for each small business group within the retail sector is presented in the figure below. The data suggests that almost one-third (31%) of the €6.6 million in costs for small businesses in the retail sector was due to sick pay for staff affected by workplace injuries, 28% was spent on medical costs including visits to the hospital and GPs and a further 25% was incurred on compensation and legal costs.



Source: Indecon/MBL

**3.1.3 Case study**

Box 1 presents the results of a case study on the impact of workplace injuries on a very small firm in the retail sector.

### Box 1: Case Study 1 on the Impact of Workplace Injuries within the Retail Sector – Employing 1 to 9 Persons – Ireland 2011

#### Background:

This small business in the retail sector was established in the 1920s and currently employs nine persons. This business is also one of a number of similar branches throughout Ireland.

This business completes weekly/monthly health and safety audits and holds regular health and safety meetings. The business also runs a competition between its other branches regarding the highest scores for the health and safety audits as an incentive for branches to focus on health and safety.

This business is part of a larger company that employs significant numbers of people in Ireland.

#### Workplace Injury:

The costs incurred by this small business in the last 12 months were as a result of a workplace injury sustained in 2005/2006. The company reported that a member of staff working in the back store room was moving a block and dropped it on his foot. The employee was wearing safety gloves and steel toe-capped boots; however, the block missed the steel toecap of the boot and damaged the foot.

#### Cost of Workplace Injury:

The staff member affected was off work initially on sick pay (paid from stamps through social welfare) and proceeded to take legal action against the business for damages. In 2011 the case was settled out of court for approximately €15,500. The staff member in question did not return and had to be replaced.

#### The total costs involved were as follows:

- The legal costs of defending the law suit against the business;
- The monetary settlement with the affected staff member; and
- The cost of replacing the staff member.

Costs incurred in the last 12 months include **€15,500** in compensation for the affected staff member and the costs of legal defence in addition to costs of replacing the affected member of staff\*.

#### Long-term Impacts on Small Business:

The company believed this to be a ‘freak’ accident as all the safety equipment was in place and little could be changed following the incident.

However, since the incident resulted in legal action it was decided to install numerous CCTV security cameras. This small business indicated that if another such incident were to occur again they would be in a position to investigate it thoroughly as a result of the camera footage.

The branch has a health and safety representative who is responsible for conducting weekly/monthly health and safety audits, organising health and safety meeting and maintaining the health and safety folder for that branch.

The parent company employs a health and safety manager who conducts health and safety audits in the branch twice a year. The parent company offers an incentive for the branch that scores the highest in the health and safety audit.

*Note: For all case studies, please also see methodology note in section 1.2.1 of this report.*

\* These reported figures may under-estimate total costs involved, as issues such as management time to defend legal case and extra equipment costs are not reported.

**Source: Indecon/MBL**

Box 2 presents the results of a second case study on the impact of workplace injuries on a small firm in the retail sector.

**Box 2: Case Study 2 on the Impact of Workplace Injuries within the Retail Sector – Employing 10 to 49 Persons – Ireland 2011**

**Background:**

This small retail business currently employs 50 persons. This retail store has a health and safety representative that ensures that manual handling and health and safety training is provided to all staff.

**Workplace Injuries:**

In the last 12 months, two staff members experienced workplace injuries. The first workplace injury was sustained by a senior member of staff and involved a manual handling incident that resulted in a strained back. The second injury involved an employee who sustained a cut on an over-sharpened meat slicer.

**Cost of Workplace Injuries:**

Both members of staff went to the doctor for medical attention. The employee who sustained the cut was taken to the company doctor and the employee with the manual handling injury went to his own GP. However, both consultations with the GP were paid for by the business.

Each member of staff took approximately a week off work to recover and was paid by the business to do so. Each member was also replaced by extra shifts from existing employees. All employees were retrained in manual handling and health and safety, and procedures were put in place to prevent any further injuries at work.

**The total costs involved were as follows:**

- The cost of the visits to the doctors;
- Sick pay for both employees affected by workplace injuries;
- Wages for replacement staff; and
- Administrative costs due to workplace injuries.

This small business incurred direct costs of approximately **€1,800** because of these two workplace injuries, including €800 in wages to replace the affected staff, €800 in sick pay and €200 in medical bills.

Source: Indecon/MBL

## 3.2 Assessment of the Hospitality Sector

This section outlines the estimated costs of workplace injuries amongst small businesses in the hospitality sector in Ireland in the twelve months to November 2011. The average cost per injury and annual cost to businesses are outlined and a breakdown of these costs is provided. In addition, a case study on a small business in the Hospitality sector is also included which details the costs of workplace injuries to this employer.

### 3.2.1 Incidence of workplace injuries in the hospitality sector

The data suggests that 15% of small businesses in the hospitality sector in Ireland experienced a workplace injury amongst management or staff over the 12-month period to November 2011.

Table 3.5: Percentage of Small Businesses in the Hospitality Sector in Ireland Affected by a Workplace Injury in 12-Month Period to November 2011	
	Average
Percentage of Small Businesses Affected by Workplace Injury	15%

Source: Indecon/MBL

The data suggests that 7,367 workplace injuries were experienced annually by small businesses in the hospitality sector. It is also estimated that staff working within small businesses in the hospitality sector were absent for a total of 11,501 days in the past twelve months due to workplace injuries (table below).

Table 3.6: Estimated Number of Days of Absence by Staff Due to Workplace Injuries in Small Business in the Hospitality Sector in Ireland in 12-Month Period to November 2011	
	Total
Estimated Number of Days Lost	11,501

Source: Indecon/MBL

### 3.2.2 Cost of workplace injuries to the hospitality sector

This section presents monetary estimates of the costs to employers of workplace injury in the twelve months to November 2011. The estimated costs per injury borne by small businesses within the hospitality sector are outlined and the overall costs of injuries for this sector over this period are provided.

**Annual average costs to a small business in the sector**

Of the small businesses in the hospitality sector that incurred costs because of workplace injuries, the table below shows that the estimated annual mean cost to a small business in this sector is €1,335. The range in annual costs associated with workplace injuries for a small business in this sector includes a low cost of €3 and the highest cost of €5,000 per small business.<sup>33</sup>

<b>Table 3.7: Estimated Annual Average and Range of Reported Costs Incurred by Small Businesses in the Hospitality Sector in Ireland in 12-Month Period to November 2011 - €</b>			
	<b>Minimum of Reported Costs</b>	<b>Maximum of Reported Costs</b>	<b>Average (Mean) of Reported Costs</b>
Estimated Annual Cost to a Small Business in the Sector - €	3	5,000	1,335

*Note: These estimates capture only those companies that incurred accident/injury costs.*

*Source: Indecon/MBL*

**Annual total cost of workplace injuries across all small businesses in sector**

Over the twelve months to November 2011, the total estimated cost of workplace injuries to small businesses in the hospitality sector in Ireland is €1.27 million.

<b>Table 3.8: Estimated Annual Cost of Workplace Injuries to Small Businesses in the Hospitality Sector in Ireland in 12-Month Period to November 2011 - €</b>	
	<b>Total</b>
Estimated Annual Cost of Workplace Injuries to All Small Businesses in Sector - €	1,266,988

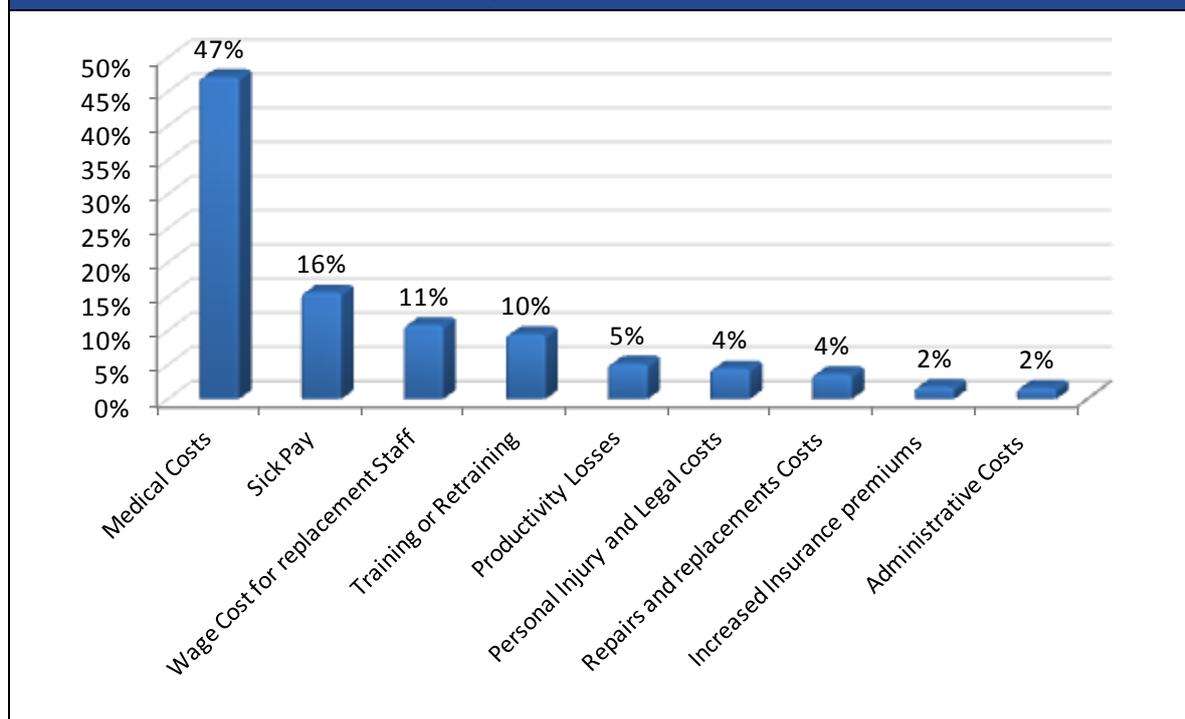
*Source: Indecon/MBL*

**Breakdown of annual costs**

The figure overleaf shows a percentage breakdown of the estimated €1.26 million incurred by small businesses in the hospitality sector in Ireland due to workplace injuries. Over 47% of the total costs are comprised of medical costs and a further 16% is due to sick pay for staff affected by workplace injuries.

<sup>33</sup> Confidence intervals around the mean are calculated and presented in Annex 3.

**Figure 3.2: Percentage Breakdown of Total Costs Incurred by Small Businesses in the Hospitality Sector as a Result of Workplace Injuries in 12-Month Period to November 2011 - %**



Source: Indecon/MBL

### 3.2.3 Case study

Box 3 overleaf presents the results of a case study on the impact of workplace injuries on a small firm in the hospitality sector.

### Box 3: Case Study on the Impact of Workplace Injuries within the Hospitality Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This case study is based on a hotel that employs five persons at low season and up to 48 at peak season. The hotel has Health and Safety as part of its induction process when a new member of staff arrives. The hotel has a company-wide induction and each department has its own induction, housekeeping, kitchen and front desk etc. Part of this process includes health and safety issues relevant to the department the member of staff would be working in. The staff would be aware of health and safety as a result, especially in relation to the impact on guests to the hotel, and there is a health and safety culture within the management. In relation to the cost of the induction, this takes approximately two hours and is performed by a senior member of staff. Although there is a cost to this exercise, the HR manager stated that management generally believes that training somebody properly is well worth it if it prevents an accident.

#### Workplace Injury:

During 2010, a key member of staff in the kitchen cut a finger quite badly with a knife. The finger was bandaged and the employee was taken to the doctor for medical attention and subsequently could not work for approximately five days as a result.

#### Cost of Workplace Injury:

##### The total costs involved were as follows:

- The visit to the doctor;
- The cost of paying the employee while absent;
- The costs of employing a replacement person in the kitchen; and
- Loss of productivity as this employee was key to the running of the kitchen, in particular during the breakfast period.

It was estimated that this incident cost a total of **€1,000** including €100 for the doctor and €900 for five days wages for the staff member affected and the replacement member of staff.

The business has costs built into its budget for absenteeism and replacement staff whether the absenteeism is a result of an accident or another reason. This accident occurred during peak season, hence the costs were easier to absorb when compared to low periods such as November. This business was quite surprised when the total costs were calculated and stated that:

*“You can really see what that amounts to in one week. If it was this time of the year when you are only doing weekends a thousand Euros would be a big percentage of your income.”*

Source: Indecon/MBL

### 3.3 Assessment of 'Other Services' Sector

This section outlines the estimated costs of workplace injuries amongst small businesses in the services sector in Ireland over the twelve months to November 2011. The average cost per injury and annual cost to businesses are presented and a breakdown of these costs is provided.

Due to the size and diversity of the services sector (excluding retail and hospitality), it is useful to consider a number of case studies to illustrate the impact of workplace injuries. We present four separate case studies conveying different types and size of small businesses that have experienced workplace injuries over the period examined.

#### 3.3.1 Incidence of workplace injuries in the services sector

The data suggests that 8% of small businesses in the services sector in Ireland experienced a workplace injury amongst management or staff over the twelve months to November 2011.

Table 3.9: Percentage of Small Businesses in the Services Sector in Ireland Affected by a Workplace Injury in the 12-Month Period to November 2011	
	Average
Percentage of Small Businesses Affected by Workplace Injury	8%

Source: Indecon/MBL

It is estimated that small businesses within the services sector have experienced 2,439 workplace injuries. The data also suggests that staff in this industry missed an estimated 6,063 days due to workplace injuries (see table below).

Table 3.10: Estimated Number of Days of Absence by Staff Due to Workplace Injuries in Small Business in the Services Sector in Ireland in the 12-Month Period to November 2011	
	Total
Estimated Number of Days Lost	6,063

Source: Indecon/MBL

#### 3.3.2 Cost of workplace injuries

This section presents monetary estimates of the costs to employers of workplace injury in the twelve months to November 2011. The estimated costs per injury incurred by small businesses within the services sector are outlined along with the overall costs of injuries for this sector since November 2010.

**Annual average costs to a small business in the sector**

Of the small businesses in the services sector that bore costs due to workplace injuries, the table below shows that the estimated annual average (mean) cost to a small business is €2,057. The small businesses in this sector that did incur costs because of workplace injuries incurred a range of annual costs from €150 to €10,000 per business. At the 95% level of confidence, we estimated that the mean annual cost of workplace injuries to small businesses in the 'other services' sector lies between €236 and €3,878.

**Table 3.11: Estimated Annual Average and Range of Reported Costs Incurred by Small Businesses in the 'Other Services' Sector in Ireland in the 12-Month Period to November 2011 - €**

	Minimum of Reported Costs	Maximum of Reported Costs	Average (Mean) of Reported Costs
Estimated Annual Cost to a Small Business in the Sector - €	150	10,000	2,057

*Note: These estimates capture only those companies that incurred accident/injury costs.*

*Source: Indecon/MBL*

**Annual total cost of workplace injuries across all small businesses in sector**

Over the 12-month period to November 2011, the total estimated cost of workplace injuries to small businesses in the services sector in Ireland is €1.1 million.

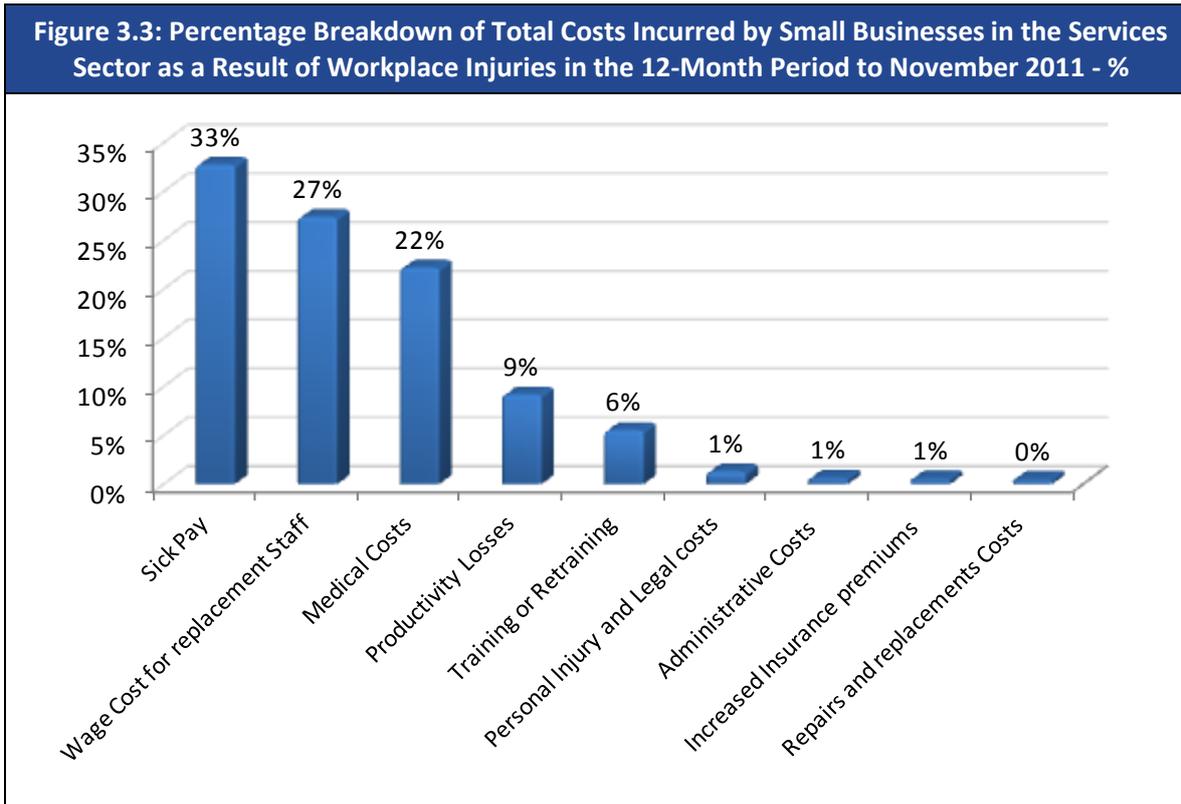
**Table 3.12: Estimated Annual Cost of Workplace Injuries to Small Businesses in the 'Other Services' Sector in Ireland in the 12-Month Period to November 2011 - €**

	Total
Estimated Annual Cost of Workplace Injuries to All Small Businesses in Sector - €	1,093,966

*Source: Indecon/MBL*

**Breakdown of annual costs**

One third (33%) of the estimated €1.1 million that workplace injuries have cost small businesses in the services sector over the 12-month period to November 2011 has been due to sick pay for staff affected by workplace injuries. Payment of wages to personnel to replace staff affected by workplace injuries accounts for a further 27% of the total costs and a further 22% is due to medical costs in the form of payments for GP and hospital visits.



Source: Indecon/MBL

### 3.3.3 Case study

Box 4 overleaf presents a case study on the impact of workplace injuries on a small firm in the services sector.

#### Box 4: Case Study 1 on the Impact of Workplace Injuries within the Services Sector – Employing 10 to 49 Persons – Ireland 2011

##### Background:

This small business is a nursing home that employs approximately 35 persons. Each member of staff is provided with health and safety training on commencement of employment and completion of a manual handling course is compulsory every two years. The company reported that Health and Safety is a priority at all times for everybody's welfare.

Many of the residents and people visiting for respite care in this nursing home suffer from dementia and can hit out at staff, not on a regular basis but two or three incidents typically occur annually.

##### Workplace Injuries:

In the past 12 months, three incidents have occurred where staff members were injured in the workplace. This typically occurs when a resident with Alzheimer's attending for respite care 'hits out' or 'takes a hard grip' of a carer which results in the carer being bruised. The affected staff members were taken to see a doctor.

##### Cost of Workplace Injuries:

These injuries all required two to three days of recovery/rest where the employee was paid sick pay and was replaced by additional staff or extra hours from existing staff.

##### The total costs involved were as follows:

- The visit to the doctor;
- The medical costs i.e. x-ray and medication;
- The cost of paying the employee while absent; and
- The costs of employing a replacement member of staff.

It was estimated that this small business incurred costs of approximately **€3,250** including €1,000 in replacement wages and sick pay and €250 in medical costs for the three workplace injuries.

##### Long-term Impacts on Small Business:

This small business indicated that morale was affected after these incidents, staff felt less motivated and productivity suffered. However, this impact usually lasted for a week or two.

It was indicated by the organisation that staff would come together and talk about the incident, discuss it and see what can be done to prevent it happening again.

This impact is mostly temporary, but this depends upon the severity and frequency of the incidents.

Source: Indecon/MBL

Box 5 presents the results of a second case study on the impact of workplace injuries on a small firm in the services sector.

### Box 5: Case Study 2 on the Impact of Workplace Injuries within the Services Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This case study involves a plant hire company that currently employs 25 persons. Annual safety audits are undertaken and the company safety statement is also reviewed. When an incident occurs there is an investigation which is reported and any necessary changes are implemented including retraining of staff, if required.

#### Workplace Injuries:

In the past 12 months, five members of staff have experienced workplace injuries. These injuries have included getting a bit of steel in a staff member's eye, slipping and tripping. These incidents are usually very small and do not require medical attention or time off work. Two of the five injuries resulted in the business incurring costs.

The first incident involved an employee who uses a rotary tool to grind and clean off metal items in the workshop. The employee was wearing protective clothing including boots, gloves, footwear, goggles and ear muffs. Over the course of the day an irritant microscopic piece of metal managed to get past the protection and into his eye. The employee went to a health clinic to have the irritant cleaned out of his eye, but did not require time off work.

The second incident involved a motor mechanic replacing the left hand mirror of a truck. The company indicated that the mechanic stood with one foot on the step of the truck and not on the ground or on a step ladder as is normal practice. When the mechanic came down off the step he missed his footing and ended up falling onto the ground. The mechanic put out his hand to protect himself and twisted his wrist. It was noted that the mechanic was wearing his safety boots with grips. This member of staff was taken to the hospital for medical attention and remained off work for two days to recover.

There was no change to practice as the procedures in place were not adhered to. No new safety procedures were put in place because safety procedures were judged to be adequate. There was no subsequent impact on productivity as this staff member's work was made up when the employee returned and this did not affect the main operations of the company.

#### Cost of Workplace Injuries:

##### The total costs involved were as follows:

- The cost of the visits to the hospital; and
- Sick pay for the staff member affected.

Because of two workplace injuries, this small services business incurred an estimated **€500** in costs the last 12 months. These costs include wages of €300 and medical bills of €200.

Source: Indecon/MBL

Box 6 presents the results of a third case study on the impact of workplace injuries on a small firm in the services sector.

### Box 6: Case Study 3 on the Impact of Workplace Injuries within the Services Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This services small business was established in its current location in 2002 but has been in business for considerably longer. The company currently employs 40 staff and is a service centre and parts distributor for various major models of motor vehicle. This business completes regular health and safety assessments and considers itself “*well up to speed on health and safety*”. Due to the nature of this small business minor incidents do occur. However, safety procedures and equipment are in place and a staff member trained in first aid is on site at all times.

#### Workplace Injury:

In the last 12 months, this business has incurred costs related to one workplace injury. This incident involved a technician who had been working on a vehicle that was placed on a ramp. The ramp was six to eight inches off the ground, which was not protocol, and the staff member was walking around the vehicle instead of going underneath, as is normal procedure. The vehicle then slipped off the ramp and the employee hurt his ankle.

The member of staff was taken straight to hospital for an x-ray. The x-ray showed ligament damage and crutches were required for a few days.

#### Cost of Workplace Injury:

The affected member of staff remained off work for 10 days and was paid sick pay for the time missed from work. This member of staff was not replaced and as a result, sales were lost and appointments were delayed. This company estimated sales of €10,500 might have been lost from the company because of the workplace injury.

#### The total costs involved were as follows:

- The cost of the visit to the hospital;
- Sick pay for the affected staff member; and
- Loss of sales.

This small services business incurred an estimated **€11,600** in costs the last 12 months. These costs include sick pay of €1,000, hospital bills of €100 and loss of potential sales of €10,500.

This business was currently completing health and safety assessments on the computer workstations and the company suggested that the business has been fairly well up to speed on health and safety and the incident would not have occurred if protocol was followed.

Source: Indecon/MBL

Box 7 overleaf presents the results of a fourth case study on the impact of workplace injuries on a small firm in the services sector.

### Box 7: Case Study 4 on the Impact of Workplace Injuries within the Services Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This case study is based on a sales and services branch of an international manufacturing company that employs approximately 50 persons in Ireland. The Irish branch is required to report all health and safety incidents to its parent company, which then assesses an incident and identifies any required changes in procedure or practice to prevent a reoccurrence. This information is communicated to all branches and, as a result, the business gets regular updates from other factories' experiences.

Due to the nature of this business, which uses heavy and bulky equipment, the most common incidents relate to lifting and moving items. The company tries to prevent such incidents by providing appropriate lifting equipment and regularly training each staff member in manual handling.

#### Workplace Injuries:

In the last 12 months, this small business has incurred costs from two workplace injuries, namely a back strain and a cut finger. The first injury was sustained by a member of staff on a customer site where the equipment to be serviced was stored on mezzanine flooring accessible by ladder. The member of staff carried his toolbox up the ladder. At the top of the ladder, he stretched over with the toolbox and strained his back. The member of staff drove to the hospital and was diagnosed with a strain injury, and was directed to rest for the back to recover. The second injury involved a member of staff lifting a heavy piece of equipment that trapped his finger. This staff member was taken to the doctor and returned to work after one day's recovery.

#### Cost of Workplace Injuries:

The member of staff who sustained the back strain was out of work for five days resting with full sick pay. He was not replaced as this would have been too difficult (due to the need to train someone in the area) and, as a result, the other members of staff picked up the extra work for the five days. This business stated that the absence of this member of staff may have put other work off or may have increased the overtime for that week due to increased travelling, but the actual cost is difficult to estimate. This business also had to introduce re-training and ensure that ladders were not to be used as work platforms.

#### The total costs involved were as follows:

- The cost of the visit to the hospital;
- The cost of visiting the doctor;
- Sick pay for the affected staff member (five days and (subsequently) one day);
- Wages in overtime to replace the affected staff member; and
- Loss of productivity during the absence of affected staff members.

In the last 12 months, this small business has incurred an estimated **€1,480** in costs because of workplace injuries. These costs include sick pay of €1,080 and medical costs of €200 and €200 in overtime wages.

The Service Supervisor stated that these incidents were usually small but because their equipment is quite heavy and bulky, such incidents would be among the more common scenarios. The company indicated that it counters that by providing the correct lifting equipment and all staff members are kept up-to-date with manual handling training.

Source: Indecon/MBL

### 3.4 Assessment of the Manufacturing Sector

This section outlines the estimated costs of workplace injuries amongst small businesses in the manufacturing sector in Ireland in the year to November 2011. The average cost per injury and annual cost to businesses are presented and a breakdown of these costs is provided. In addition, three case studies on a small business in the manufacturing sector are included, which details the costs of workplace injuries to this employer.

#### 3.4.1 Incidence of workplace injuries in the manufacturing sector

The data suggests that 10% of small businesses in the manufacturing sector in Ireland were affected by a workplace injury in the twelve months to November 2011.

Table 3.13: Percentage of Small Businesses in the Manufacturing Sector in Ireland Affected by a Workplace Injury in the 12-Month Period to November 2011	
	Average
Percentage of Small Businesses Affected by Workplace Injury	10%

Source: Indecon/MBL

It is estimated that this 10% of small businesses within the manufacturing sector affected by a workplace injury since November 2010 have experienced 1,938 workplace injuries. The data also suggests that an estimated 10,374 days are missed by staff in small businesses in the manufacturing sector because of these 1,938 workplace injuries.

Table 3.14: Estimated Number of Days of Absence by Staff Due to Workplace Injuries in Small Business in the Manufacturing Sector in Ireland in the 12-Month Period to November 2011	
	Total
Estimated Number of Days Lost	10,374

Source: Indecon/MBL

#### 3.4.2 Cost of workplace injuries to the manufacturing sector

This section presents monetary estimates of the costs to employers of workplace injuries in the manufacturing sector. The estimated costs per injury borne by small businesses within the sector are outlined, in addition to the estimated overall costs of injuries among small businesses in this sector over the 12-month period to November 2011.

**Annual average costs to a small business in the sector**

Within the small businesses in the manufacturing sector that incurred costs because of workplace injuries, the table indicates that the estimated annual average cost to a small business is €28,687. These small businesses have incurred a broad range of annual costs including a low cost of €100 and a high cost of €300,000 because of workplace injuries. At the 95% level of confidence, we estimate that the mean annual cost of workplace injuries to small businesses in the manufacturing sector lies between -€4,093 and €62,277.<sup>34</sup>

**Table 3.15: Estimated Annual Average and Range of Reported Costs Incurred by Small Businesses in the Manufacturing Sector in Ireland in the 12-Month Period to November 2011 - €**

	Minimum of Reported Costs	Maximum of Reported Costs	Average (Mean) of Reported Costs
Estimated Annual Cost to a Small Business in the Sector - €	100	300,000	28,687

*Note: These estimates capture only those companies that incurred accident/injury costs.*

*Source: Indecon/MBL*

**Annual total cost of workplace injuries across all small businesses in sector**

Since November 2010, the total estimated cost of workplace injuries to small businesses in Ireland is €9.49 million.

**Table 3.16: Estimated Annual Cost of Workplace Injuries to Small Businesses in the Manufacturing Sector in Ireland in the 12-Month Period to November 2011 - €**

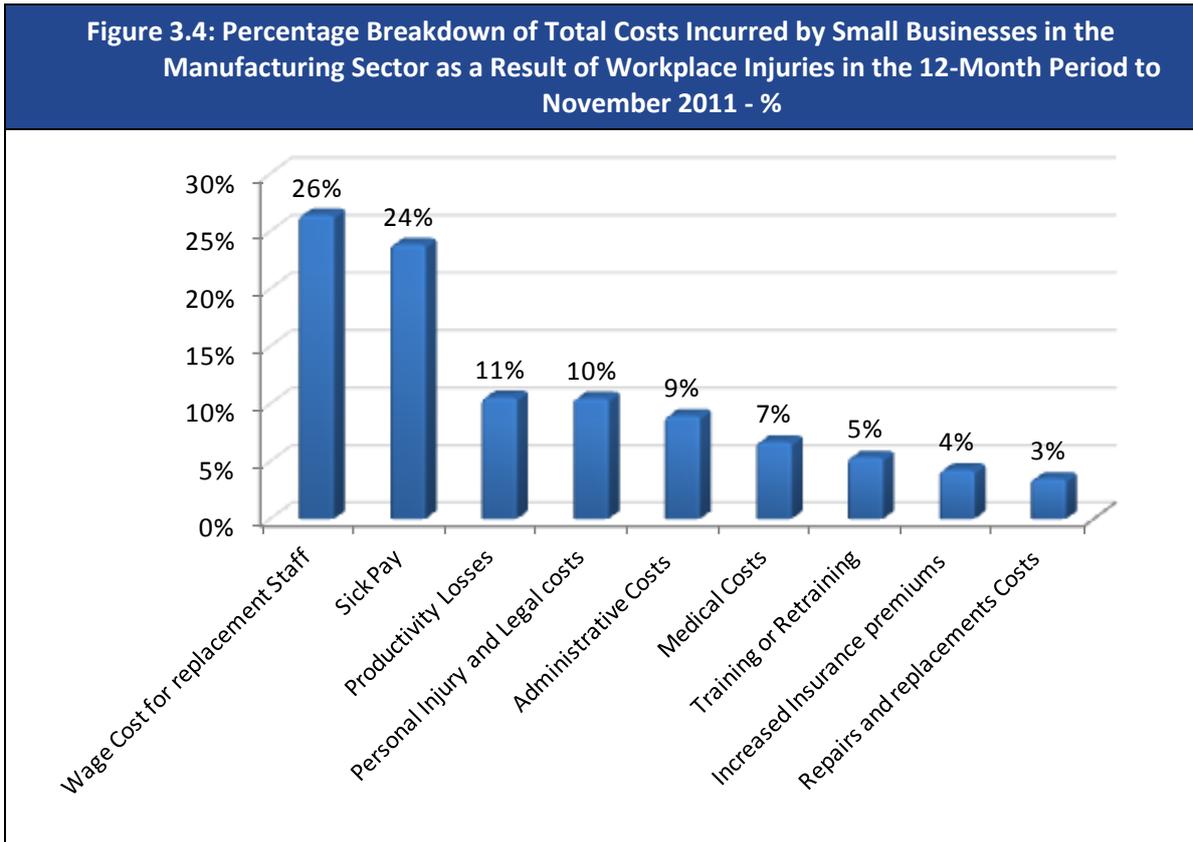
	Total
Estimated Annual Cost of Workplace Injuries to All Small Businesses in Sector - €	9,487,742

*Source: Indecon/MBL*

**Breakdown of annual costs**

The percentage breakdown of the €9.49 million in costs incurred by the manufacturing sector is presented in the figure overleaf. Twenty-six per cent of the total costs to this sector were due to wages for staff to replace those affected by workplace injuries, 24% was due to sick pay and 11% was due to loss of productivity from staff affected by workplace injuries.

<sup>34</sup> Estimation of the confidence intervals revealed negative lower bound limits due to the large variation in cost of workplace injuries in the sample data. Further to this, the application of the standard formula for the calculation of these confidence intervals implicitly assumes a normal distribution for the sample. In the event that the sample data is skewed, this may also be an explanation for the negative lower bound limits. In reality the negative lower bound limits are to be interpreted as being positive but very close to zero.



Source: Indecon/MBL

### 3.4.3 Case study

Box 8 overleaf presents a case study on the impact of workplace injuries on a small firm in the manufacturing sector.

### Box 8: Case Study 1 on the Impact of Workplace Injuries within the Manufacturing Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This manufacturing company employs approximately 30 people. This small business operates on a permanent basis (24 hours) during a five-day week, which includes three work shifts per day.

The last significant injury sustained within this business, which occurred two years ago, resulted in significant changes in policy, practice and equipment. The business incurred considerable related costs of approximately €10,000, including medical costs, productivity loss, wages for replacement staff and retraining. Resulting from this incident, significant resources were invested and due to on-going health and safety training in manual handling, fire safety and fork lift truck training, updated policy and procedures, regular audits, on-going supervision and recent investment in safer equipment and tools, only one noteworthy injury was experienced in the last twelve months. The senior management is very mindful of health and safety issues and any actions required following regular audits are implemented to maintain employees' safety in the workplace.

#### Workplace Injury:

The incident two years ago involved a trained machine operator who was using a semi-automatic machine. The normal procedure for the machine operator was that at the end of each production cycle the operator would open the door of the machine, take the part out, cut the sprue from the widget using a knife and then close the door to allow the machine to produce the next part.

On one occasion, the operator had switched her knife from her right hand to her left hand, opened the door, took out the part, closed the door with her left hand and dropped the knife. The knife cut her tendon at the joint between her thumb and her finger, causing her to lose the power to her thumb.

When the incident occurred, the operator was brought straight to the GP, who referred her to hospital, where she had surgery on her hand. This was followed by rehabilitation including physiotherapy.

Since the incident, the company implemented changes, which include supplying employees with cut resistant gloves and ceramic knives with retractable blades. This is in addition to their other protective clothing, which includes protective glasses, facemasks and ear protection.

Another incident involved a machine operator, who was asked to help the store man using a pallet truck to unload one-tonne pallets from the back of a truck. The machine operator had received manual handling training and was selected on the basis that he would be capable of helping with the task. The company reported that the following day the machine operator approached his supervisor and said that he had hurt his back. The operator said he did not know if it happened at work or later that evening when he was carrying heavy equipment for a band. This incident was reported to management and a doctor's appointment was arranged immediately. The employee was taken to the doctor, was told to rest for a few days, and required two days off work. Due to the timing of the incident during a slow period of business and towards the end of the week, existing staff covered this employee's labour and little productivity was lost.

#### Cost of Workplace Injury:

The total costs involved for the injury involving the knife were as follows:

- Doctors' fees, hospital fees and prescriptions;
- Physiotherapy;
- The cost of paying the employee while absent.

It was estimated that this incident cost a total of **€10,000**.

**The total costs involved for the back injury were as follows:**

- The visit to the doctor;
- The cost of prescription medication; and
- The cost of paying the employee while absent.

It was estimated that this incident cost a total of **€270**, including €70 for the doctor and €200 for two days wages for the staff member affected.

All staff and management are kept up-to-date on health and safety, fire safety and forklift driving. The Production Co-ordinator stated that health and safety was a priority.

The company indicated that senior management carry out audits and then consider whether there is a need to implement new procedures or re-training. Management indicated that they would do anything in order to maintain people's safety in the work place.

*Source: Indecon/MBL*

Box 9 overleaf presents the findings of a second case study on the impact of workplace injuries on a small firm in the manufacturing sector.

### Box 9: Case Study 2 on the Impact of Workplace Injuries within the Manufacturing Sector – Employing 10 to 49 Persons – Ireland 2011

#### Background:

This case study is based on a manufacturing company that employs approximately 34 persons. The majority of incidents experienced throughout the business's operation have been in relation to manual handling, including back strain. A number of staff have suffered from sore backs and have had to change role within the business as a result. This business appoints a Health and Safety Officer every three years, who is required to maintain their initial position and perform the duties of a Health and Safety Officer when required. Thus, time taken by the Health and Safety Officer to investigate incidents and report upon them is taken from productivity within their area.

The business has increased its focus on health and safety issues in the last few years with manual handling and other training to ensure that staff members are more aware of health and safety issues in the workplace. The company also noted that they perceived that the Health and Safety Authority are active in promoting health and safety. The company has also become more and more aware of health and safety through the media.

#### Workplace Injuries:

In the past 12 months, two incidents have occurred in this small business. The first incident involved a new member of staff in the office who was assisting on the production floor. This staff member bent down to pick up a bin of product and knocked their head on the conveyor belt above when straightening up. The employee was taken to the doctor for a check-up but returned to work the next day.

#### Cost of First Workplace Injuries:

The costs incurred from this incident included the cost of the doctor, the loss of productivity from the staff member and the person accompanying them to the doctor and the time it took the Health and Safety Officer to investigate the incident and report afterwards.

#### The total costs involved were as follows:

- The visit to the doctor; and
- Loss of productivity from staff member and Health and Safety Officer.

It was estimated that this incident had a direct cost of **€200**, but this excludes costs of additional health and safety measures and the impact on productivity.

Source: Indecon/MBL

Box 10 overleaf is the continuation of the second case study on the impact of workplace injuries on a small firm in the manufacturing sector, relating to the details of a second incident.

### Box 10: Case Study 2 on the Impact of Workplace Injuries within the Manufacturing Sector – Employing 10 to 49 Persons – Ireland 2011

#### Cost of Second Workplace Injury:

The second incident involved an employee that cleans for the company. This employee hurt his back while lifting an item on the production floor and was taken to the doctor for medical attention. The injury required pain medication and a recovery period of approximately four days. The member of staff was paid sick pay for the days taken off work and another member of staff took over the duties of the affected member. The incident was then investigated and a report was delivered to management regarding the causes and identifying any actions required to prevent any further such incidents.

#### The total costs involved were as follows:

- The visit to the doctor;
- The cost of medication;
- Wages for replacement staff;
- Retraining in manual handling;
- Loss of productivity for Health and Safety Officer; and
- Sick pay for four days of work.

It was estimated that this incident cost a total of **€1,500** including €100 in medical bills, €500 in sick pay and €500 in wages to replace the member of staff affected.

The company believed this was an unfortunate accident as procedures were in place that were not followed and the member of staff had just received the relevant manual handling training. Further re-training was provided when the employee returned to work.

The total cost to this small business from workplace-related injuries is estimated to be approximately **€1,700**.

Source: *Indecon/MBL*

Box 11 overleaf presents the results of a third case study on the impact of workplace injuries on a small firm in the manufacturing sector.

**Box 11: Case Study 3 on the Impact of Workplace Injuries within the Manufacturing Sector – Employing 10 to 49 Persons – Ireland 2011****Background:**

This case study relates to a manufacturing business that currently employs ten persons. Each member of staff is trained in manual handling and health and safety.

**Workplace Injury:**

This small business has experienced one incident in the last twelve months. A member of staff was sent out to undertake a job, which required a hoist to complete. The company indicated that the staff member chose not to raise the hoist for height but instead climbed onto the bars of the basket and began to work from the top bar of the basket. The member of staff slipped, fell off the top bar of the basket (eight feet) and bruised a number of ribs.

**Cost of Workplace Injury:**

The affected member of staff went to see his own doctor and took three days off work to rest because of the bruised ribs. This small business paid the staff member sick pay for the three days off work and productivity was not impacted upon negatively.

**The total costs involved were as follows:**

- The cost of paying the employee while absent.

It was estimated that the workplace injury cost this small business approximately **€300** in sick pay for the affected staff member.

Source: Indecon/MBL

### 3.5 Summary of Findings

Our analysis of the findings has provided the estimated cost of workplace injuries to small businesses (that have incurred costs relating to workplace injuries) within the retail, manufacturing, services and hospitality sectors. The main findings from this analysis are as follows:

- The annual average (mean) cost incurred by a small business in Ireland because of workplace injuries is estimated to be €9,138. The data suggests that the average (mean) cost of workplace injuries to a small business in the manufacturing sector is considerably higher at €28,687 per small business affected.

<b>Table 3.17: Estimated Annual Average Cost of Workplace Injuries to a Small Business in Ireland by Sector in the 12-Month Period to November 2011 - €</b>			
<b>Sector</b>	<b>Annual Cost per Business by Sector - €</b>		
	<b>Minimum of Reported Costs</b>	<b>Maximum of Reported Costs</b>	<b>Mean of Reported Costs</b>
Manufacturing	100	300,000	28,687
Retail	20	25,000	4,473
Other Services	150	10,000	2,057
Hospitality	3	5,000	1,335
<b>Annual Average (Mean) Cost for All Small Businesses with Under 50 employees</b>			<b>9,138</b>

*Note: These estimates capture only those companies that incurred accident/injury costs.*

*Source: Indecon/MBL*

- The findings suggest that the overall cost of workplace injuries to small businesses in Ireland over the 12-month period to November 2011 was €18.5 million. The table below also shows the variation of the estimated costs borne by each sector with workplace injuries costing the manufacturing sector €9.49 million and the retail sector €6.6 million.

<b>Table 3.18: Estimated Annual Cost of a Workplace Injury in Small Business in Ireland by Sector in the 12-Month Period to November 2011 - €</b>	
<b>Sector</b>	<b>Total Cost for Sector</b>
Manufacturing	9,487,742
Retail	6,615,653
Hospitality	1,266,988
Other Services	1,093,966
<b>Total Cost for All Businesses under 50 employees</b>	<b>18,464,350</b>

*Source: Indecon/MBL*

- The breakdown of the estimated costs incurred by small businesses in each sector is provided in the table overleaf. Sick pay and medical costs account for over €8 million of the total costs borne by small businesses because of workplace injuries in the twelve months to November 2011.

- ❑ These costs are especially high for the manufacturing and retail sectors. In addition, wages for staff to replace workers affected by workplace injuries account for €3 million of the total costs and this is particularly high amongst the manufacturing sector.
- ❑ The findings suggest that the manufacturing sector may incur different costs because of workplace injuries when compared to the other three sectors, with high costs for personal injury and legal costs, loss of productivity, administrative costs, training and retraining, repairs and replacements and increased insurance premiums.

**Table 3.19: Breakdown of Estimated Annual Costs Incurred Due to Workplace Injuries in Small Businesses in Ireland – Total and Sectors (12-Month Period to November 2011) - €**

Cost	Sector				Total
	Retail	Hospitality	Other Services	Manufacturing	
Sick Pay	2,018,691	201,437	358,264	2,264,987	<b>4,843,378</b>
Medical Costs	1,861,547	586,700	242,147	634,382	<b>3,324,776</b>
Wage Cost for Replacement Staff	259,128	140,007	300,982	2,505,891	<b>3,206,008</b>
Personal Injury and Legal Costs	1,660,535	57,713	14,172	994,362	<b>2,726,728</b>
Productivity Losses	37,169	66,894	100,338	1,001,802	<b>1,206,204</b>
Administrative Costs	288,399	21,075	6,699	849,247	<b>1,165,420</b>
Training or Retraining	267,697	122,501	60,377	506,937	<b>957,511</b>
Repairs and replacements Costs	196,921	47,482	5,108	329,252	<b>578,763</b>
Increased Insurance premiums	25,567	23,181	5,880	400,880	<b>455,508</b>
<b>Estimated Total Cost of Workplace Injuries per Sector</b>	<b>6,615,653</b>	<b>1,266,989</b>	<b>1,093,966</b>	<b>9,487,742</b>	<b>18,464,350</b>

Source: Indecon/MBL

## 4 Overall Conclusions from Assessment

This report provided an assessment of the costs due to work-related injuries incurred by small businesses in the Retail, Manufacturing, Hospitality and 'Other Services' sectors. The research focuses on the costs to employers/small businesses across these sectors.

The research was based on an aggregation of responses provided by a sample of 809 small businesses across the four sectors profiled. This indicates that an estimated 14,947 workplace injuries may have occurred across small businesses in these sectors in the 12-month period up to November 2011 (when the fieldwork on the present research was undertaken). These incidents include all workplace injuries experienced, irrespective of the number of days absent from work or costs incurred.

Importantly, the research indicates that 31% of businesses employing between 10 and 49 persons and 46% of firms employing between one and nine persons believed that costs incurred due to workplace injuries were either significant or very significant. The study also shows that the annual total costs of workplace-related injuries experienced by small businesses in the sectors examined is estimated at €18.5 million in the year to November 2011, with an average (mean) annual cost of €9,138 per small business which experienced an injury. Small businesses in the manufacturing sector are estimated to have incurred €9.5 million in annual costs. By contrast, it is estimated that small businesses in the 'other services' sector experienced annual total costs of €1.1 million because of workplace injuries.

The research has found that the four most significant costs related to workplace injuries for small businesses in these sectors are sick pay (26%), medical costs (18%), wages for replacement staff (17%), and legal costs and compensation (15%). These categories together account for just over three-quarters of overall costs incurred.

## **ANNEX 1: RESEARCH QUESTIONNAIRES**

## Annex 1 Research Questionnaires

### A1.1 Questionnaire for Core Interviews

#### RESEARCH ON THE COSTS INCURRED BY SMALL BUSINESSES AS A RESULT OF WORKPLACE INJURIES CORE TELEPHONE INTERVIEWS WITH FIRMS

##### INTRODUCTION AND BACKGROUND

“Good morning/good afternoon, I am calling from Millward Brown Lansdowne and I was wondering if I could speak with the person responsible for HR and staff issues in your business.”

If questioned on background/reason for call, then say:

“Millward Brown Lansdowne are undertaking research on behalf of the Health and Safety Authority on workplace health issues and we would like to provide your company with the opportunity to input into this important national research.”

If referred to the relevant person, repeat the above.

“Would you be willing to participate in a telephone interview, which would take no more than 10 to 15 minutes of your time? The information you will share with us will be:

- Used for the purposes of this research only;
- Will be treated in strictest confidence and will not be shared in any way with the Health and Safety Authority or any other third party; and
- Will be aggregated in anonymous form with responses provided by other firms who are assisting us on this research.

If agreement is reached on this basis, then proceed to questionnaire overleaf.

**QUESTIONNAIRE****Company Business/Background****ASK ALL**

Q. 1 How many people are currently employed in your business (across all sites/locations)? (Note: this should include owners, management and other staff).

- (a) Between one and nine persons;
- (b) Between 10 and 20 persons;
- (c) Between 21 and 49 persons.

Q. 2 Over the past 12 months, has your company experienced any workplace injuries among management or staff? **INTERVIEWER: READ OUT.** By a workplace accident, I mean any accident or incident involving a fatality or where a non-fatal injury is sustained. A non-fatal injury includes a wound or superficial injury, a bone fracture, a dislocation, sprain or strain, an amputation, concussion, burn or scald or chemical-related injury or an electric shock.

- (a) Yes
- (b) No
- (c) Don't Know/ Cannot remember

**ASK ALL CODE 1 AT Q.2. OTHERS CLOSE AND INTERVIEWER THANK RESPONDENT FOR THEIR TIME AND CONTRIBUTION**

Q. 3a Approximately how many workplace injuries have occurred in your company over the past 12 months? **INTERVIEWER: IF RESPONDENT IS UNSURE ASK FOR BEST ESTIMATE.**

Q3b And approximately how many staff members have been affected by workplace injuries? **INTERVIEWER: IF RESPONDENT IS UNSURE ASK FOR BEST ESTIMATE.**

Q. 4 Now, I would like to talk to you about the impact these injuries have had on your business.

Thinking about the past 12 months, approximately, how many days were staff absent from work as a result of work-related injuries? **INTERVIEWER: IF RESPONDENT IS UNSURE ASK FOR BEST ESTIMATE**

Q. 5 Did any part of your business have to shut down or close at any stage due to these injury incidents?

- (a) Yes
- (b) No
- (c) Don't Know/ Cannot remember

ASK ALL CODE 1 AT Q.5. OTHERS GO TO Q.7

Q.6a How many times during the last 12 months did any part of your business have to stop functioning or close due to these workplace injury incidents? **INTERVIEWER:** IF RESPONDENT IS UNSURE ASK FOR BEST ESTIMATE

Q6b What was the average time, in hours, the business had to stop functioning or close due to these workplace injuries? **INTERVIEWER:** IF RESPONDENT IS UNSURE ASK FOR BEST ESTIMATE

I would now like to ask you about the financial and other cost implications of workplace injuries.

Q.7 In your opinion, how significant or not do you think are the costs incurred by small businesses in your sector because of workplace injuries?

- i. Very Significant
- ii. Significant
- iii. Neither Significant nor Insignificant
- iv. Insignificant
- v. Very Insignificant
- vi. Don't Know

Q. 8 Thinking about your business, can you please tell me if you incurred any of the following costs arising from workplace injuries? **INTERVIEWER:** READ OUT EACH CATEGORY IN TURN. **SCRIPTOR:** ROTATE ORDER OF CATEGORIES

- a. **Sick Pay** – for example, the costs of sick pay related to absent injured staff;
- b. **Wage/Salary Costs for Replacement Staff** – for example, the costs of hiring and paying staff to replace staff that are absent due to injury;
- c. **Productivity Losses** – for example, costs relating to lost time and output due to business being interrupted or having to stop functioning as a result of workplace injuries;
- d. **Training or Retraining** – for example, costs arising from having to train another staff member or staff replacement to do the job of the injured party and/or the costs of providing additional training, up-skilling, or retraining for the injured member returning to work
- e. **Compensation/Personal Injury and Legal Costs** – for example, costs arising from compensating the injured party, including legal costs;
- f. **Repairs and Replacement Costs** – for example, costs arising from the repair and/or replacement of structural damage or damage to equipment occurring as a result of accidents;
- g. **Increased Insurance Premiums** – for example, increased employer liability insurance, health/medical insurance, or public liability insurance;
- h. **Administrative Costs** – for example, costs related to time and effort spent on investigating accidents and costs associated with administering sickness claims, insurance claims, compensation claims, etc.
- i. **Any Other Costs** – are there any other types of costs not included in the above categories that you recall.

Q. 9 Approximately how much do you think workplace injuries have cost your business in the past 12 months? INTERVIEWER: IF RESPONDENT IS UNSURE OR UNABLE TO GIVE A PRECISE ANSWER, READ OUT SCALES AND PROBE TO PRECODES

- (a) Zero €
- (b) Up to €5,000
- (c) Between €5,000 and €10,000
- (d) Between €10,000 and €50,000
- (e) Between €50,000 and €100,000
- (f) Between €100,000 and €500,000
- (g) Between €500,000 and €1 million
- (h) Over €1 million

INTERVIEWER: PLEASE NOTE IF WHEN THINKING ABOUT THE RANGE THE RESPONDENT MENTIONS AN EXACT AMOUNT, PLEASE ENTER THIS EXACT AMOUNT INSTEAD OF CODING THE RANGE IN THE SCALE

SCRIPTOR: THE ONLY CATEGORIES TO APPEAR AT THIS QUESTION ARE THE ONES THE RESPONDENT OUTLINED AT Q8. ROTATE ORDER TO CATEGORIES APPEARING ON SCREEN.

Q. 10 Of the overall cost of \_\_\_\_\_ (ANSWER GIVEN AT Q.9), what percentage would you attribute to the following areas I read out? INTERVIEWER: READ OUT ALL CATEGORIES FIRST AND THEN READ OUT EACH ONE IN TURN AND GET RESPONSE TO EACH ONE.

- a. **Sick Pay** – for example, the costs of sick pay related to absent injured staff;
- b. **Wage/Salary Costs for Replacement Staff** – for example, the costs of hiring and paying staff to replace staff that are absent due to injury;
- c. **Productivity Losses** – for example, costs relating to lost time and output due to business being interrupted or having to stop functioning as a result of workplace injuries;
- d. **Training or Retraining** – for example, costs arising from having to train another staff member or staff replacement to do the job of the injured party and/or the costs of providing additional training, up-skilling, or retraining for the injured member returning to work;
- e. **Compensation/Personal Injury and Legal Costs** – for example, costs arising from compensating the injured party, including legal costs;
- f. **Repairs and Replacement Costs** – for example, costs arising from the repair and/or replacement of structural damage or damage to equipment occurring as a result of accidents;
- g. **Increased Insurance Premiums** – for example, increased employer liability insurance, health/medical insurance, or public liability insurance;
- h. **Administrative Costs** – for example, costs related to time and effort spent on investigating accidents and costs associated with administering sickness claims, insurance claims, compensation claims, etc.
- i. **Any Other Costs** – are there any other types of costs not included in the above categories that you recall.

SCRIPTOR: PLEASE ENSURE ANSWERS GIVEN ADD TO 100%

INTERVIEWER: IF RESPONDENT ANSWERS NONE, PLEASE RECORD AS 0%

ASK IF EXACT AMOUNT IS GIVEN AT Q.9

Q10b After thinking about the costs specifically and in detail, are you still happy that the overall cost is \_\_\_\_\_ (INSERT ANSWER GIVEN AT Q9).

Yes

No

ASK IF RESPONDENT SAYS NO AT Q10b

Q10c Approximately how much do you think workplace injuries have cost your business in the past 12 months?

ASK IF EXACT AMOUNT HAS NOT BEEN GIVEN AT Q.9

Q10d After thinking about the costs specifically and in detail, can you now give me an exact overall cost for workplace injuries in your business over the past 12 months?

Yes

No

ASK IF RESPONDENT SAYS YES AT Q10d

Q10e Approximately how much do you think workplace injuries have cost your business in the past 12 months?

*End of Questions*

**Thank you for your time in answering the above questions. Once we have collated the responses from different firms, we also plan to further investigate some of the issues discussed above in more depth through a series of case studies on a sample of ten businesses across different sectors.**

**Could I ask whether you would in principle be willing to participate in a follow-on call at a later date in the next 3-4 weeks, which would allow us to discuss some of the above aspects in more detail with you? As in the case of today's discussion, any information provided as part of such a follow-on discussion would be treated in strictest confidence.**

**If respondent agrees, indicate 'Yes' and note contact details**

**If 'No', thank them for their time and valuable inputs to this research.**

## A1.2 Topic Guide for Interviews to support Case Studies

### Introduction

- Explain the nature and purpose of the research
- Explain the tape-recorder
- Give reassurances regarding confidentiality

### Background Information on Company

- Number of Employees
- Nature of Business
- Role within the company, number of years in company, roles before if any
- Type of company culture, up-to-date with technology etc.
- General attitude in company to health and safety procedures, is this something that is channelled from the top? Anything else?
- Is there an active programme in place to champion health and safety? Can you give me some more details on that? Anything else?

### Workplace Injuries in General

- How often do they happen? Is there a particular area where they happen more often than other? If so, why is that?
- Is there a procedure in place to document what happened? If so, can you give more details on that?
- Is there someone directly responsible for looking into what happened? What is their role?

### Workplace Injuries specifically and thinking about one which impacted most strongly on business

- How many staff was involved? Were these people directly involved? What was the extent of their injuries? How was this dealt with at the time? Is there anything that would have done differently?
- Did they carry out one or more roles within the business?
- How long were they absent for? Has their injury any long term impacts on their health?
- How senior were the staff members involved?
- What were the immediate impacts to the business in terms of:
  - Business need to shut down
  - Loss of output
  - Need to bring in replacement/temporary staff
- If the business was forced to shut, what was the general feeling about the business being shut? Result of an unfortunate accident or considered an inconvenience, anything else?
- Did productivity suffer? Why? How?
- Did motivation suffer? Why? How?
- Did the quality of output suffer? Why? How?
- What do you think were the overall costs in monetary terms to the business?

- How do you think this overall cost broke down in terms of sick pay, pay costs for replacement staff, productivity losses, training or retraining, compensation and personal injury and legal costs, repairs and replacement costs, increased insurance premiums costs, admin costs and any other costs you can think of?
- Were there any other impacts other than cost to the business such as loss of reputation, negative publicity, loss of staff morale? Anything else?
- Are there now new systems and processes in place to minimise further accidents or such incidents happening again? Has safety and health become a priority now for the business? If yes, is this driven by desire to keep costs of this impact down or something else?

### **Wrap up**

- Any final comments or suggestions?
- Thank and close

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## Annex 3 Additional Supporting Data

### Confidence Intervals

The table below presents the estimated 95% confidence intervals around the annual mean cost of workplace injuries. The formula applied for calculating the 95% confidence interval for the mean using the z-statistic<sup>35</sup> is as follows:

$$\bar{x} \pm Z \cdot \frac{\sigma}{\sqrt{n}}$$

Z is the critical value for the two-tailed test and in this case since we have chosen the 95% level of confidence,  $Z = 1.96$ . X-bar is the mean,  $\sigma$  is the population standard deviation and n is the population size. The results are presented in the table below and indicate that at the 95% level of confidence the annual mean cost of workplace injuries across the four sectors lies between -€368 and €18,644<sup>36</sup>.

95% Confidence Intervals for Annual Mean Cost of Workplace Injuries to Small Businesses in the Retail, Hospitality, Manufacturing and 'Other Services' Sectors in Ireland			
	1 to 9 Employees	10 to 49 Employees	Total
Estimated Annual Mean Cost to a Small Businesses – Four Sectors - €	3,065	9,880	<b>9,138</b>
Confidence Interval - lower Limit	-754	-1,840	<b>-368</b>
Confidence Interval - upper Limit	6,884	21,601	<b>18,644</b>

*Note: The mean cost figures indicated relate only to businesses that reported workplace injuries that resulted in financial costs to the business*

**Source: Indecon/MBL**

<sup>35</sup> The z-statistic was applied to the formula because the population standard deviation is known.

<sup>36</sup> Estimation of the confidence intervals revealed negative lower bound limits due to the large variation in cost of workplace injuries in the sample data. Further to this, the application of the standard formula for the calculation of the confidence intervals implicitly assumes a normal distribution for the sample. In the event that the sample data is skewed, this may also be an explanation for the negative lower bound limits. In reality, the negative lower bound limits may be interpreted as being positive but very close to zero.