

# Injuries, Illnesses, and Fatalities in Food Manufacturing, 2008

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*Workers in food manufacturing are more likely to be fatally injured and experience nonfatal injuries and illnesses than workers in private industry as a whole. Food manufacturing workers are also much more likely to suffer an injury requiring job transfer or restriction than one that requires days away from work.*

Food manufacturing was one of the largest industries in the manufacturing sector in 2008. Workers in this industry process, package, and transport livestock and agricultural products, transforming them into the food products that are seen in households, grocery stores, and restaurants.<sup>1</sup> Although more than 50 percent of workers in this industry are employed in production occupations, they operate in diverse environments that present a multitude of occupational safety and health risks.<sup>2</sup> Workers in food manufacturing are more likely to be fatally injured and experience nonfatal injuries and illnesses than those in private industry as a whole. In addition, food manufacturing workers are much more likely to suffer a nonfatal injury or illness requiring job transfer or restriction than one resulting in days away from work to recuperate.

As can be seen in table 1, the food manufacturing subsector is divided into nine subindustries. These subindustries are based on the North American Industry Classification System (NAICS).<sup>3</sup> In 2008, animal slaughtering and processing employed the largest proportion (34.5 percent) of food manufacturing workers, while seafood product preparation and packaging employed the smallest proportion (2.5 percent).

**Table 1. Employment distribution in food manufacturing industries, 2008**

NAICS	Industry	Annual average employment	Percent employment
311	Food manufacturing	1,474,432	100.0
3111	Animal food manufacturing	50,892	3.5
3112	Grain & oilseed milling	61,997	4.2
3113	Sugar & confectionary product manufacturing	70,569	4.8
3114	Fruit & vegetable preserving & specialty food manufacturing	175,941	11.9
3115	Dairy product manufacturing	130,186	8.8
3116	Animal slaughtering & processing	508,283	34.5
3117	Seafood product preparation & packaging	37,397	2.5
3118	Bakeries & tortilla manufacturing	276,275	18.7
3119	Other food manufacturing	162,892	11.0

Source: BLS Quarterly Census of Employment and Wages, 2008

This article uses data from the Survey of Occupational Injuries and Illnesses (SOII) and the Census of Fatal Occupational Injuries (CFOI) to profile nonfatal work-related injuries and illnesses and workplace fatalities in the food manufacturing industry.<sup>4</sup>

## Nonfatal Injuries And Illnesses

In 2008, the food manufacturing industry reported 93,200 total recordable injury and illness cases--at a rate of 6.2 cases per 100 full-time workers. This was higher than the manufacturing sector rate of 5.0 cases and 59 percent higher than the overall private industry rate of 3.9. Almost all (eight of nine) subindustries within the food manufacturing industry also had incidence rates that were significantly higher than the rate in private industry as a whole, ranging from animal slaughtering and

processing (NAICS 3116), at a rate of 7.5 cases per 100 full-time workers, to grain and oilseed milling (NAICS 3112), at 4.5 cases per 100 full-time workers.

Total recordable case data are split into three subcategories: (1) cases with days away from work, (2) cases with job transfer or restriction only, and (3) other recordable cases. (See table 2.) Manufacturing was the only private industry sector in which there were more injury and illness cases requiring job transfer or restriction (207,900) than there were cases requiring days away from work (164,900). Food manufacturing had 39,200 injury and illness cases requiring job transfer or restriction, with an incidence rate of 2.6 cases per 100 workers while the rate for total private industry was 0.9 cases per 100 workers. Among the food manufacturing subindustries and even private industry as a whole, animal slaughtering and processing had one of the higher job transfer or restriction rates, at 3.9 cases per 100 full-time workers.

**Table 2. Number of nonfatal occupational injuries and illnesses in food manufacturing industries by case type, 2008 (thousands)**

NAICS	Industry sector	Total recordable cases	Total cases with days away from work, job transfer or restriction	Cases with days away from work	Cases with job transfer or restriction only	Other recordable cases
311	Food manufacturing	93.2	60.5	21.3	39.2	32.7
3111	Animal food manufacturing	2.6	1.5	0.7	0.8	1.1
3112	Grain & oilseed milling	3.0	1.7	0.6	1.1	1.3
3113	Sugar & confectionary product manufacturing	4.0	2.2	0.8	1.4	1.8
3114	Fruit & vegetable preserving & specialty food manufacturing	9.6	5.5	2.3	3.2	4.1
3115	Dairy product manufacturing	9.1	6.0	2.9	3.1	3.0
3116	Animal slaughtering & processing	39.8	26.6	6.1	20.5	13.1
3117	Seafood product preparation & packaging	2.7	1.6	1.1	0.5	1.0
3118	Bakeries & tortilla manufacturing	14.1	9.7	4.2	5.5	4.4
3119	Other food manufacturing	8.4	5.7	2.5	3.2	2.7

Source: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, 2008

More serious injuries and illnesses often require days away from work to allow the worker time to recuperate. The food manufacturing industry accounted for 2 percent of total cases with days away from work in all of private industry. The incidence rate for cases involving days away from work in the food manufacturing industry was 1.4 cases per 100 full-time workers. This rate is about 27 percent higher than the rate for all private industry (1.1 cases per 100 full-time workers). Among the food manufacturing subindustries and private industry as a whole, dairy product manufacturing had one of the higher rates of cases with days away from work, at 2.2 cases per 100 full-time workers.

The type of injury or illness most often associated with days away from work in the food manufacturing industry was sprains and strains, with 31 percent of injuries and illnesses. Contact with objects, as well as overexertion (such as lifting, pulling, or pushing) were the most frequent events that led to days-away-from-work cases across food manufacturing and its nine

subindustries. Ground, floor surfaces, and containers were the predominant sources of injuries and illnesses, collectively accounting for 37 percent of cases with days away from work.

Another measurement for cases with days away from work is musculoskeletal disorders (MSDs). The Department of Labor defines MSDs as cases in which the nature of injury or illness is sprains, strains, tears; back pain, hurt back; soreness, pain, and hurt, except the back; carpal tunnel syndrome; hernia; or musculoskeletal system and connective tissue diseases and disorders where the event or exposure leading to the injury or illness was bodily reaction/bending, climbing, crawling, reaching, twisting; overexertion; or repetition. Due to the fact that the MSD definition includes a variety of both injuries and illnesses, some of which have small numbers of cases, incidence rates are presented per 10,000 full-time workers instead of per 100 full-time workers.

Food manufacturing accounted for 12 percent of all MSDs in the manufacturing industry and had a higher incidence rate than the manufacturing sector as a whole, with 40.6 cases per 10,000 workers. Among food manufacturing subindustries, animal slaughtering and processing had the most MSDs, with 1,740 cases. Although animal slaughtering and processing had the most number of cases, the incidence rate for this industry and its median days away from work were almost equal to that of private industry as a whole; 33.0 out of every 10,000 workers in animal slaughtering and processing suffered MSDs, with a median of 9 days away from work, while 33.4 out of every 10,000 workers in private industry suffered MSDs, with a median of 10 days away from work.

**Table 3. Number, incidence rate, and median days away from work resulting from musculoskeletal disorders (MSDs) in food manufacturing industries, 2008**

NAICS	Industry	Total MSD cases	Incidence rate	Median days
31	Manufacturing	51,980	38.0	13
311	Food manufacturing	6,090	40.6	11
3111	Animal food manufacturing	190	36.1	4
3112	Grain & oilseed milling	170	25.3	13
3113	Sugar & confectionary product manufacturing	150	21.7	11
3114	Fruit & vegetable preserving & specialty food manufacturing	520	29.2	10
3115	Dairy product manufacturing	1,030	76.7	10
3116	Animal slaughtering & processing	1,740	33.0	9
3117	Seafood product preparation & packaging	330	86.3	10
3118	Bakeries & tortilla manufacturing	1,280	47.6	17
3119	Other food manufacturing	670	41.5	13

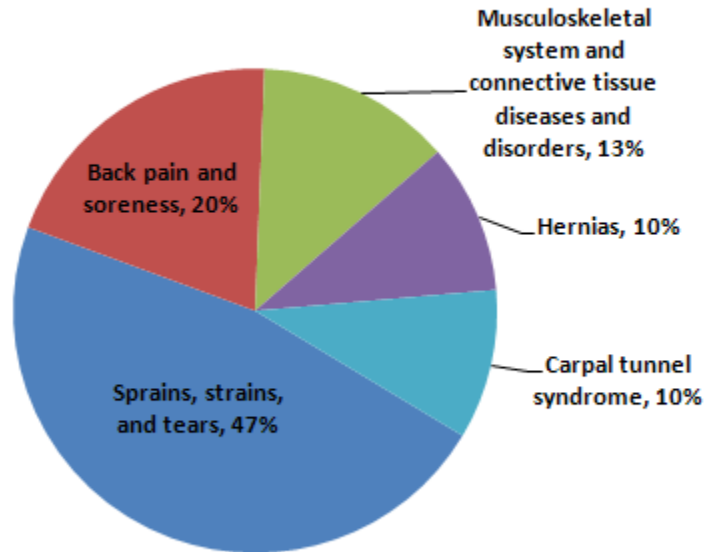
Note: Incidence rates represent the number of injuries and illnesses per 100 full-time workers (10,000 full-time workers for illness rates) and were calculated as follows:

$(N \div EH) \times 200,000$ , where N = number of injuries and illnesses;  
 EH = total hours worked by all employees during the calendar year;  
 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year);  
 20,000,000 = base for 10,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Source: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, 2008

As shown in chart 1, the most common nature of injuries and illnesses affecting workers in animal slaughtering and processing among MSD cases was sprains, strains, and tears, accounting for 47 percent of the cases involving days away from work.

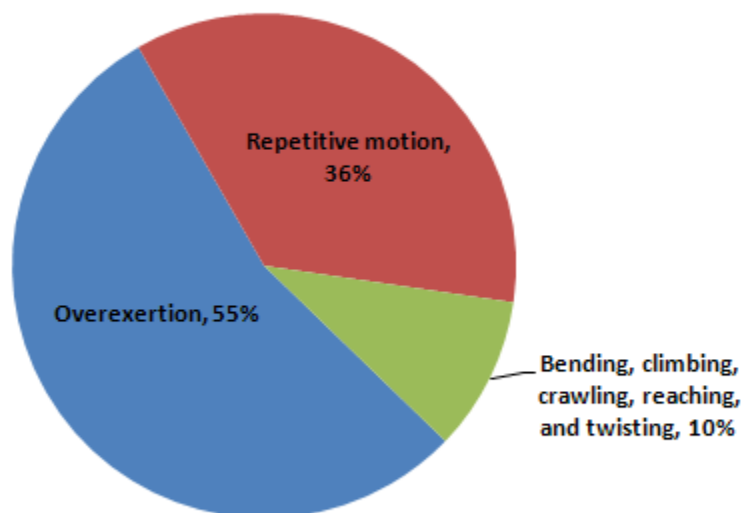
**Chart 1. Percent distribution of musculoskeletal disorders by nature of injury or illness in animal slaughtering and processing, 2008**



Source: U.S. Bureau of Labor Statistics

In addition, as can be seen in chart 2, the most common event or exposure affecting workers in animal slaughtering and processing was overexertion (lifting, pulling, pushing, carrying), accounting for 55 percent of the cases.

**Chart 2. Percent distribution of musculoskeletal disorders by event or exposure in animal slaughtering and processing, 2008**



Note: Percentages do not sum to 100 percent because of rounding.

Source: U.S. Bureau of Labor Statistics

Although the food manufacturing industry only accounted for 6.5 percent of total private industry illnesses, its rates and numbers of illness cases were among the highest of all three-digit NAICS sectors.<sup>5</sup> In 2008, there were 12,200 total

recordable illness cases in food manufacturing, and the incidence rate for the industry (81.0 illnesses per 10,000 workers) was about four times greater than that of private industry (19.7 illnesses per 10,000 workers). Total recordable illness cases are further divided into skin disorders, respiratory conditions, poisonings, hearing loss, and all other illnesses. As can be seen in table 4, the distributions of these illness categories for food manufacturing and all private industry were not consistent. Food manufacturing had a larger proportion of hearing loss and all other illnesses and a smaller proportion of skin disorders and respiratory conditions.

**Table 4. Total recordable illness distribution in food manufacturing industries and private industry, 2008**

Illness categories	Private industry		Food manufacturing	
	Number of illnesses	Percent of total illnesses	Number of illnesses	Percent of total illnesses
<b>Total cases</b>	187.4	100	12.2	100
<b>Skin disorders</b>	35.8	19.1	0.7	5.7
<b>Respiratory conditions</b>	14.8	7.9	0.3	2.5
<b>Poisonings</b>	2.6	1.4	0.1	0.8
<b>Hearing loss</b>	22.1	11.8	2.9	23.8
<b>All other illnesses</b>	112	59.8	8.2	67.2

Source: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, 2008

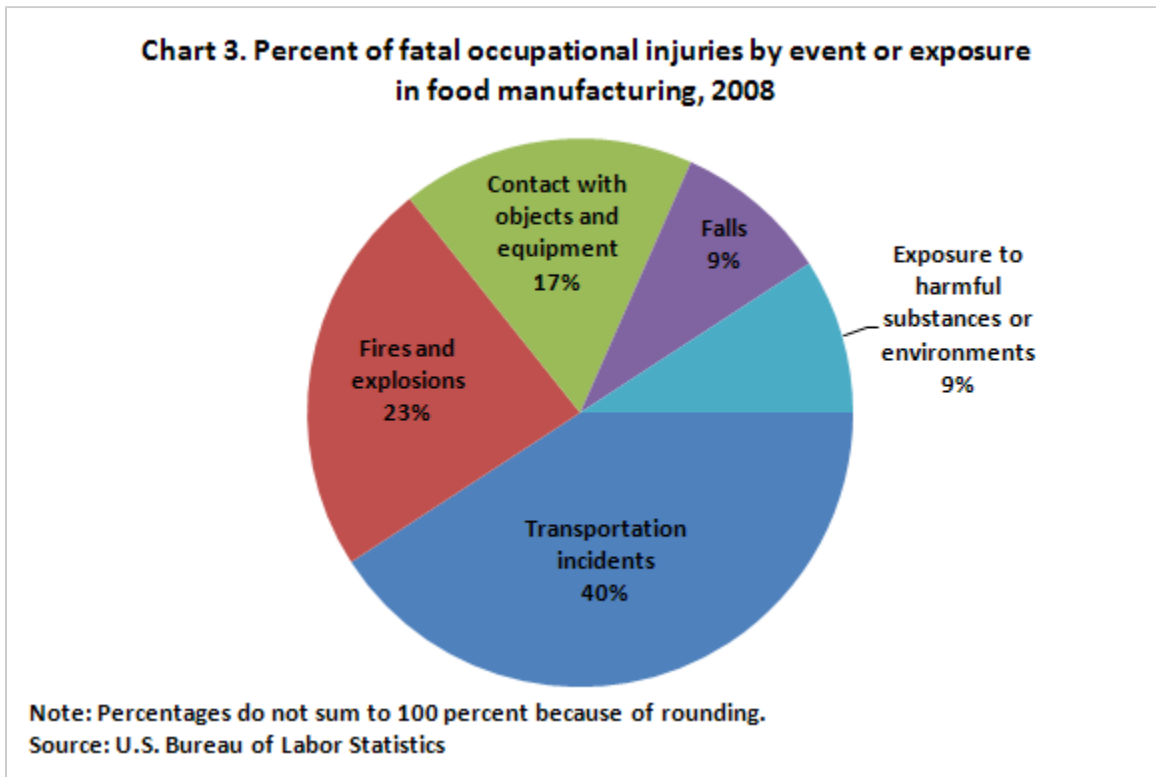
Almost half of the injuries or illnesses with days away from work in food manufacturing in 2008 affected workers whose occupations dealt directly with production. Production workers can be further broken out into six occupation groups: supervisors of production workers, assemblers and fabricators, food processing workers, metal and plastic workers, plant and system operators, and other production workers. (Three additional occupation groups exist under production workers but are not applicable to the food manufacturing industry: printing workers; textile, apparel, and furnishings workers; and woodworkers.) Of the relevant occupation groups, food processing and other production workers accounted for nearly 90 percent of the injuries and illnesses among all production workers in food manufacturing. Aside from production-related occupations, two other occupation groups in the food manufacturing industry had notably high percentages of injuries and illnesses: transportation and material moving workers suffered 30.2 percent of the total, and installation, maintenance, and repair workers accounted for about 7 percent.

Male workers accounted for a larger proportion (70.8 percent) of injury and illness cases with days away from work than their proportion of total employment (63.0 percent) in the food manufacturing industry.<sup>6</sup> A little less than three quarters (71.8 percent) of injured food manufacturing workers were aged 25 to 54. White, non-Hispanic workers accounted for 37.9 percent of cases involving days away from work, while Hispanic workers accounted for 25.5 percent. Workers whose race was unreported accounted for 21.4 percent of nonfatal injury and illness cases involving days away from work. The percent distribution of injured or ill food manufacturing workers by race was consistent with the distribution among all private industry workers for all races except Hispanic workers. The percentage of injured or ill Hispanic workers was nearly twice as high in food manufacturing as in private industry.

### Fatal Workplace Injuries

The food manufacturing industry accounted for the largest number of fatal workplace injuries in the manufacturing sector. A total of 70 workers were killed on the job in 2008, a 37-percent increase from the 51 fatalities reported in 2007. The total fatality rate--the number of fatal occupational injuries per 100,000 full-time equivalent workers--was 4.4 in food manufacturing in 2008; this was slightly higher than the overall private industry fatality rate of 4.0.

As shown in chart 3, of the 70 fatalities recorded in 2008, 40 percent occurred from transportation incidents, 23 percent were due to fires or explosions, and 17 percent resulted from contact with objects and equipment.



As can be seen in table 5, with 18 of the 70 fatal workplace injuries in food manufacturing, sugar and confectionary manufacturing accounted for the largest portion (26 percent) of fatal injuries. Of these 18 fatalities, 14 were due to fires or explosions, all of which can be attributed to the 2008 sugar factory explosion in Port Wentworth, Georgia.<sup>7</sup> Sugar and confectionary manufacturing also accounted for 87.5 percent of the fatal injuries resulting from fires or explosions occurring within the food manufacturing industry as a whole in 2008. This distribution is unlike previous years--there were only 16 fatal injuries due to fires or explosions recorded in food manufacturing between 2003 and 2007.

**Table 5. Number of fatal workplace injuries in food manufacturing industries, 2008**

NAICS	Industry	Number of fatalities
311	Food manufacturing	70
3111	Animal food manufacturing	15
3112	Grain & oilseed milling	4
3113	Sugar & confectionary product manufacturing	18
3114	Fruit & vegetable preserving & specialty food manufacturing	3
3115	Dairy product manufacturing	7
3116	Animal slaughtering & processing	10
3117	Seafood product preparation & packaging	7
3119	Other food manufacturing	4

Note: Totals for major categories may include subcategories not shown separately. CFOI fatality counts exclude illness-related deaths unless precipitated by an injury event.

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2008

The eight other food manufacturing industries accounted for 52 fatal workplace injuries in 2008. Among these 52 fatalities, the two most frequent fatal events were transportation incidents (26 fatalities) and contact with objects and equipment (11 fatalities). The majority (62 percent) of the transportation incidents were highway incidents.

Most of the 70 fatal injuries suffered by workers in the food manufacturing industry in 2008 were the result of multiple traumatic injuries (40 percent) or other traumatic injuries (20 percent). Among the other traumatic injuries, 64 percent were from poisonings or toxic effects (4 fatalities) and asphyxiations-suffocations (5 fatalities).

The primary source that accounted for the most fatal workplace injuries in food manufacturing in 2008 was vehicles, which include highway trucks and automobiles, and accounted for 33 fatalities in 2008, a 65-percent increase from 2007. However, persons, plants, and minerals were the largest secondary source, accounting for 16 fatal injuries.

The majority of workers fatally injured in the food manufacturing industry were men (96 percent). Exactly 80 percent of the decedents were aged 35 to 64. White, non-Hispanic workers accounted for 56 percent of fatally injured food manufacturing workers, while Hispanic workers accounted for 19 percent of the fatalities in 2008. The percent distribution of decedents in food manufacturing by race was consistent with the distribution for all workplace fatalities. The majority (74 percent) of the fatalities that occurred in the food manufacturing industry in 2008 came in two occupational groups: production workers (19 fatalities) and transportation and material moving workers (33 fatalities).

## Conclusion

Workers in food manufacturing are more likely to be fatally injured and experience nonfatal injuries and illnesses than those in private industry as a whole. In addition, compared with other private industry workers, food manufacturing workers are much more likely to suffer an injury requiring job transfer or restriction than days away from work. Production workers constitute more than half of the employees in the entire food manufacturing industry. However, while they account for the majority of nonfatal injuries, transportation and material moving workers account for the majority of fatal injuries.

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## Notes

<sup>1</sup> For a description of the food manufacturing industry, see “[Industries at a Glance, Food Manufacturing: NAICS 311](http://www.bls.gov/iag/tgs/iag311.htm),” on the Internet at <http://www.bls.gov/iag/tgs/iag311.htm>.

<sup>2</sup> Data on the distribution of workers in the food manufacturing industry by occupation are available from the Bureau of Labor Statistics [Occupational Employment Statistics](http://www.bls.gov/oes/current/naics3_311000.htm) program. See “[May 2009 National Industry-Specific Occupational Employment and Wage Estimates, NAICS 311000 — Food Manufacturing](http://www.bls.gov/oes/current/naics3_311000.htm),” on the Internet at [http://www.bls.gov/oes/current/naics3\\_311000.htm](http://www.bls.gov/oes/current/naics3_311000.htm).

<sup>3</sup> For more information on the North American Industry Classification System (NAICS), see the [BLS NAICS](http://www.bls.gov/bls/naics.htm) page on the Internet at <http://www.bls.gov/bls/naics.htm>.

<sup>4</sup> More information on the BLS [Injuries, Illnesses, and Fatalities \(IIF\)](http://www.bls.gov/iif/home.htm#tables) program can be found on the Internet at <http://www.bls.gov/iif/home.htm#tables>.

<sup>5</sup> Although the food manufacturing industry only accounted for 6.5 percent of total private industry illnesses, its rates and numbers of illness cases were among the highest of all three-digit NAICS sectors. Other industries with comparable incidence rates to that of food manufacturing include the leather and allied product manufacturing industry (NAICS code 316), at 86.3 illnesses per 10,000 employees; and the transportation equipment manufacturing industry (NAICS code 336), at 81.2 illnesses per 10,000 employees. Other industries with comparable total recordable cases include hospitals (NAICS code 622), at 21,400 illness cases; and the transportation equipment manufacturing industry (NAICS code 336), at 12,200 illness cases.

<sup>6</sup> Data on the demographic distribution of workers in the food manufacturing industry are available from the Bureau of Labor Statistics [Current Population Survey](http://www.bls.gov/cps/demographics.htm) program. See “[Demographics](http://www.bls.gov/cps/demographics.htm),” on the Internet at <http://www.bls.gov/cps/demographics.htm>.

<sup>7</sup> See “[Report Cites Lack of Precautions in 2008 Sugar Plant Fire](http://www.nytimes.com/2009/09/25/us/25sugar.html?ref=imperialsugarcompany),” *New York Times*, Sept. 24, 2009, on the Internet at <http://www.nytimes.com/2009/09/25/us/25sugar.html?ref=imperialsugarcompany> (accessed January 11, 2011).

**Data for Chart 1. Percent distribution of musculoskeletal disorders by nature of injury or illness in animal slaughtering and processing, 2008**

Nature of injury or illness	Percent
Sprains, strains, and tears	47%
Back pain and soreness	20%
Musculoskeletal system and connective tissue diseases and disorders	13%
Hernias	10%
Carpal tunnel syndrome	10%
Total	100%

**Data for Chart 2. Percent distribution of musculoskeletal disorders by event or exposure in animal slaughtering and processing, 2008**

Event or exposure	Percent
Overexertion	55%
Repetitive motion	36%
Bending, climbing, crawling, reaching, and twisting	10%

**Data for Chart 3. Percent of fatal occupational injuries by event or exposure in food manufacturing, 2008**

Event or exposure	Percent
Transportation incidents	40%
Fires and explosions	23%
Contact with objects and equipment	17%
Falls	9%
Exposure to harmful substances or environments	9%
Total	98%