

Injuries, Illnesses and Fatalities in Manufacturing, 2005

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The manufacturing industry consists of establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.¹ In 2005, 1 in 9 workers in the United States was employed in the manufacturing industry.² These workers produce a vast array of items--consumer electronics, food products, and automobiles, to name just a few. Workers in manufacturing also face unique hazards in the workplace. Generally, workers in the industry experience nonfatal injuries more frequently than all private sector workers combined, but they are fatally injured less frequently.

In 2005, the manufacturing industry accounted for 21 percent of occupational injuries and illnesses, but only 8 percent of at-work fatalities. Moreover, the incidence rate³ in manufacturing for repetitive motion cases with days away from work (10.7 cases per 10,000 full-time workers) was the highest in any industry sector and twice the rate for all private industry. This article profiles work-related injuries, illnesses, and fatalities in the manufacturing industry using data from two BLS programs: the [Survey of Occupational Injuries and Illnesses \(SOII\)](#) and the [Census of Fatal Occupational Injuries \(CFOI\)](#).⁴

Fatal injuries. A total of 393 workers were killed on the job in manufacturing in 2005,⁵ a 15-percent decrease from the 463 fatalities reported in 2004. The total fatality rate--the number of fatal occupational injuries per 100,000 employed workers--was 2.4 in manufacturing in 2005; this was much lower than the overall fatality rate of 4.0.

Workers fatally injured in the manufacturing industry in 2005 were predominantly men (91 percent). Almost 70 percent of the decedents were aged 35 to 64. White, non-Hispanic workers accounted for 70 percent of fatally injured workers, while Hispanic workers accounted for 15 percent of the fatalities in 2005. The percent distribution of decedents in manufacturing by gender and race were consistent with the distribution for all workplace fatalities.

Approximately 28 percent of fatally injured workers in manufacturing were killed due to transportation incidents; 50 percent of these were highway incidents. Still, workers in manufacturing incurred a lower proportion of fatalities due to transportation incidents than did workers in general, for whom transportation incidents account for 43 percent of all fatalities. Approximately 17 percent of fatally injured manufacturing workers were struck by an object; 65 percent of these involved the decedent being struck by a falling object. Many workers killed when struck by objects were struck by parts and materials (34 workers), more specifically, building materials and solid elements (21 workers).

An additional 10 percent of the fatalities were a result of factory workers being caught in running equipment or machinery. More than half of the fatalities resulting from being caught in running equipment or machinery involved being caught in metal, woodworking, and special material machinery. One-third of all fatal workplace injuries associated with being caught in running equipment or machinery were in manufacturing, although manufacturing accounts for only 8 percent of all at-work fatalities.

Production occupations accounted for 41 percent of all fatalities in the manufacturing industry in 2005. Within production occupations, metal workers and plastic workers accounted for the largest number of fatalities (43 workers), followed by first-line supervisors/managers (25 workers), and assemblers and fabricators (23 workers). Transportation and material moving occupations accounted for 24 percent of all fatalities in private manufacturing. Within transportation and material moving occupations, material moving workers accounted for the largest number of fatalities (51 workers). Motor vehicle operators accounted for 37 fatalities.

Among manufacturing fatalities, 59 decedents were working in nonmetallic mineral product manufacturing at the time of their death. (See chart 1.) Workers in food manufacturing accounted for 46 fatalities, and those in fabricated metal product manufacturing accounted for 43 fatalities. Although the total fatality rate for the manufacturing industry was 2.4 per 100,000

workers, two industries had particularly high rates--cement, concrete, lime, and gypsum product manufacturing (18.4) and wood product manufacturing (6.8).

Fatally injured workers in manufacturing were frequently injured performing vehicular and transportation operations (25 percent) and constructing, repairing, or cleaning (24 percent). Of the workers fatally injured in manufacturing, 17 percent were injured while using or operating tools and machinery. The most common location for fatally injured private manufacturing workers was a factory or plant (49 percent).

Fatal injuries to workers in manufacturing occur throughout the United States. In 2005, Texas (31 workers) had the highest number of fatalities among manufacturing workers. Other states with a large number included California (19 workers), Pennsylvania (19 workers) and Ohio (18 workers).

Nonfatal injuries and illnesses. Although manufacturing accounted for only 13 percent of total private sector employment, it accounted for 21 percent of all injury and illness cases reported in private industry in 2005. The total recordable case rate (number of nonfatal injuries or illnesses per 100 full-time workers) in 2005 was 6.3, which is much higher than the total private industry rate of 4.6. The rate for manufacturing declined approximately 5 percent from 2004, when it was 6.6. Manufacturing was the only industry in which there were more injury and illness cases requiring job transfer or restriction (281,691) than there were requiring days away from work (209,130).⁶

Turning now to cases involving days away from work, manufacturing workers accounted for 17 percent of those kinds of injuries and illnesses in 2005. Male workers incurred approximately 78 percent of the nonfatal injuries and illnesses with days away from work in manufacturing--a higher percentage than that for all of private industry (66 percent). Three-quarters of workers were aged 25 to 54. White, non-Hispanic workers accounted for 52 percent of cases involving days away from work, while Hispanic workers accounted for 16 percent. Workers whose race was unreported accounted for approximately 22 percent of nonfatal injury and illness cases. The percent distribution of injured manufacturing workers by race was consistent with the distribution of all injured workers by race.

Among manufacturing injuries and illnesses involving days away from work, 14 percent of affected workers were in the transportation equipment manufacturing industry. An additional 14 percent of injured workers were in the fabricated metal product manufacturing industry. Fabricated metal product manufacturing had an incidence rate of 192.9 per 10,000 workers. This is much higher than the incidence rate for the total manufacturing industry (147.1). Workers in food manufacturing accounted for 11 percent of injuries and illnesses involving days away from work within the manufacturing industry.

In 2005, the manufacturing industry accounted for approximately 18 percent of musculoskeletal disorder (MSD) cases.⁷ In 2004, 20 percent of private industry MSD cases occurred in the manufacturing industry. MSD cases in manufacturing decreased by 12 percent in 2005, while MSD cases for all private industry workers decreased by 7 percent.⁸

For cases involving days away from work, the most common event for workers in manufacturing in 2005 was overexertion, which represented 23 percent of such cases. (See chart 2.) Of these overexertion injuries, 51 percent resulted from overexertion in lifting and 22 percent from pushing or pulling objects. Being struck by an object was also prevalent in manufacturing (15 percent of cases involving days away from work). More than a third (35 percent) of struck-by-object cases involved being struck by a falling object. Being caught in an object, equipment, material was a frequent event as well (10 percent). More than half (54 percent) caught-in-object cases involved being caught in running machinery or equipment, and 13 percent resulted from being compressed or pinched by rolling, sliding, or shifting objects.

Sprains and strains (35 percent) were the most common nature of injury for workers within the manufacturing industry in 2005. Cuts and lacerations (12 percent), bruises and contusions (8 percent), and fractures (8 percent) were also common injuries. The most frequently injured part of the body was the back (18 percent).

Approximately 25 percent of injuries and illnesses involving days away from work in manufacturing necessitated a worker missing 31 or more days, while 16 percent required missing just a single day. The percent distribution for injuries and illnesses involving days away from work in manufacturing was very close to that for all private industry workers. Moreover, the median days away from work was 7 for both industry groups.

In sum, the fatality rate for workers in manufacturing is lower than the rate for all workers, but the incidence rate for nonfatal injuries and illnesses is much higher than the rate for all workers. In other words, manufacturing workers are less likely to be killed on the job than workers as a whole, but they are more likely to experience a nonfatal injury or illness.

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Notes

1 For more information on the North American Industry Classification System (NAICS), see the [NAICS page](#) on the U.S. Census Bureau website at <http://www.census.gov/epcd/naics02/def/NDEF31-33.HTM>.

2 Employment data are from the BLS [Current Population Survey \(CPS\)](#). The number of workers aged 16 years and older who were employed in manufacturing in 2005 was 16.3 million. For more information on the CPS, see their home page on the BLS website at <http://www.bls.gov/cps/home.htm>.

3 Incidence rates represent the number of injuries and illnesses per 10,000 full-time workers and were calculated as follows: $(N / EH) \times 20,000,000$, where N = number of injuries and illnesses, EH = total hours worked by all employees during the calendar year, and 20,000,000 = base for 10,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

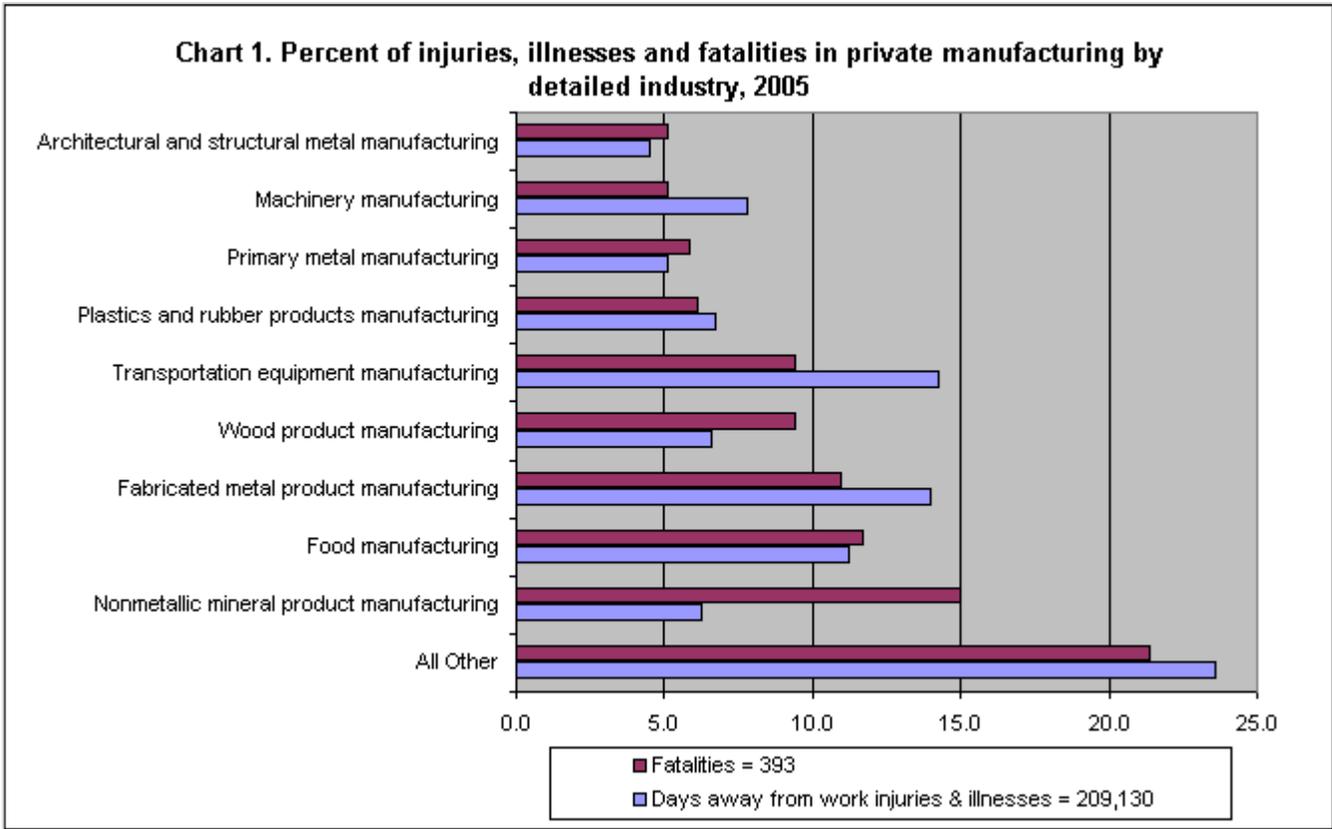
4 The data in this analysis come from two programs within the BLS [Injuries, Illnesses, and Fatalities \(IIF\)](#) program. Data on fatalities are from the annual Census of Fatal Occupational Injuries, which covers all fatal occupational injuries in the United States. Workplace fatality cases are census counts and include fatalities that occur among private sector wage and salary workers and among self-employed workers. Data on nonfatal injuries and illnesses are from the Survey of Occupational Injuries and Illnesses, an annual survey of private sector business establishments. For more information on these programs, see BLS [Handbook of Methods](#), chapter 9, "Occupational Safety and Health Statistics," available on the Internet at <http://www.bls.gov/opub/hom/home.htm>. The IIF program uses the [Occupational Injury and Illness Classification System \(OIICS\)](#) to define the circumstances surrounding an injury or illness, such as the event, nature, part of body, and source. Occupations are defined using the [Standard Occupational Classification \(SOC\)](#) system, and industries are defined using the [North American Industry Classification System \(NAICS\)](#).

5 Fatalities in this study are based on revised and final fatality counts.

6 Cases that involve days work away from work are cases in which the injury or illness requires at least 1 day away from work with or without job restriction or transfer. Cases requiring job transfer or restriction occur when an employer or health care professional recommends that an employee not perform all functions of their job due to a workplace injury or illness. Job transfer cases differ from days away from work cases because no work days are lost in the former.

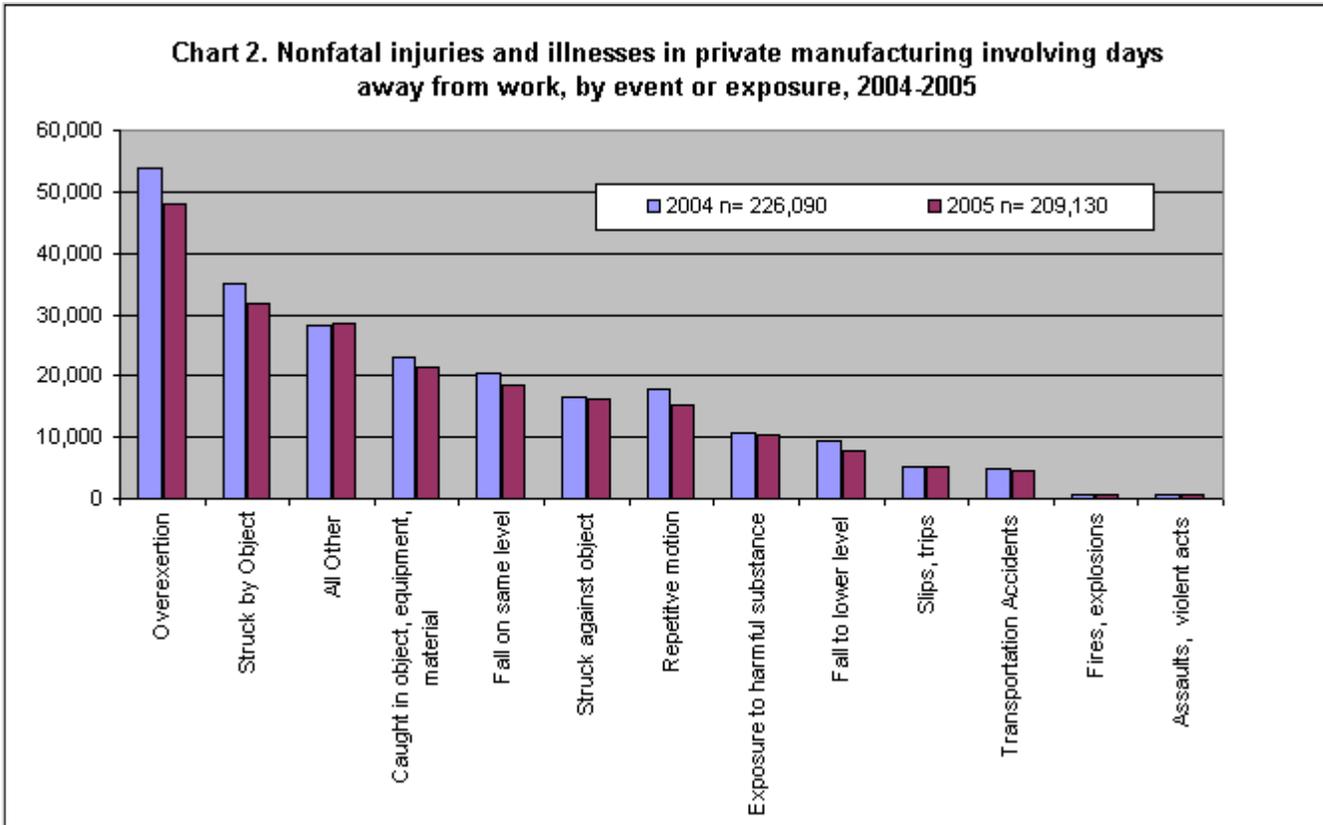
7 These are cases in which the nature of injury is among the following: sprains, tears; back pain, hurt back; soreness, pain, hurt, except back; carpal tunnel syndrome; hernia; musculoskeletal system and connective tissue diseases and disorders; injury- or illness-causing events or exposures such as bodily reaction/bending, climbing, crawling, reaching, twisting; overexertion; or repetition. Cases of Raynaud's phenomenon, tarsal tunnel syndrome, and herniated spinal discs are not included. Although these cases may be considered MSDs, they are classified in categories that also include non-MSD cases.

8 In 2005, there were 69,130 MSD cases in the manufacturing industry and 375,540 cases in all of private industry.



Data for Chart 1. Percent of injuries, illnesses and fatalities in private manufacturing by detailed industry, 2005

Industry	Days away from work injuries & illnesses = 209,130	Fatalities = 393
All Other	23.6	21.4
Nonmetallic mineral product manufacturing	6.3	15.0
Food manufacturing	11.2	11.7
Fabricated metal product manufacturing	14.0	10.9
Wood product manufacturing	6.6	9.4
Transportation equipment manufacturing	14.2	9.4
Plastics and rubber products manufacturing	6.7	6.1
Primary metal manufacturing	5.1	5.9
Machinery manufacturing	7.8	5.1
Architectural and structural metal manufacturing	4.5	5.1



Data for Chart 2. Nonfatal injuries and illnesses involving days away from work in the manufacturing industry, 2004-05

	2004 n= 226,090	2005 n= 209,130
Total	226,090	209,130
Overexertion	53,910	47,930
Struck by Object	34,910	31,830
All Other	28,290	28,420
Caught in object, equipment, material	22,910	21,450
Fall on same level	20,555	18,330
Struck against object	16,520	16,310
Repetitive motion	17,730	15,240
Exposure to harmful substance	10,590	10,430
Fall to lower level	9,300	7,830
Slips, trips	5,030	5,350
Transportation Accidents	4,980	4,670
Fires, explosions	750	700
Assaults, violent acts	620	640