

Have Disorders Associated with Repeated Trauma Stopped Increasing?

BY DINO DRUDI

In 1995, there were 494,800 newly-reported work-related illnesses in the American private sector.¹ Occupational illnesses are any abnormal conditions or disorders, caused by long-term or repeated exposure to factors associated with employment and are distinct from occupational injuries, which result from a single work-related event or a single instantaneous exposure in the work environment.

Repeated trauma disorders account for over three-fifths of these newly-reported occupational illness cases. The 308,200 new disorders associated with repeated trauma in 1995 include conditions due to repeated motion, vibration, or pressure.² Conditions such as sprains, which are usually classified as occupational injuries, are considered occupational illnesses involving repeated trauma when they arise from cumulative traumatic exposure over time.

Repeated trauma disorders for many years have been the fastest growing category of occupational illness reported in the BLS survey. They rose steadily from 22,600 cases in 1982 to 332,100 cases in 1994, an increase of over 1,000 percent in 12 years, before dropping to 308,200 in 1995 (see chart). During this time the corresponding incidence rates grew from 3.6 cases per 10,000 full-time workers in 1982 to 41.1 cases in 1994, before dropping to 37.8 cases in 1995.

In 1986, disorders associated with repeated trauma became the leading occupational illness category, surpassing skin diseases and disorders such as occupational dermatitis as the leading occupational illness. By 1989, disorders associated with repeated trauma outnumbered all other occupational disease categories combined (see chart). Table 1 presents the number of cases and incidence rates for disor-

Table 1. Number and incidence rates for nonfatal disorders associated with repeated trauma, private industry, 1976-95

	Disorders associated with repeated trauma	
	Number (thousands)	Incidence rates ¹
1976	23.0	4.1
1977	23.4	4.0
1978	20.2	3.3
1979	21.9	3.4
1980	23.2	3.6
1981	23.0	3.5
1982	22.6	3.6
1983	26.7	4.2
1984	34.7	5.1
1985	37.0	5.3
1986	45.5	6.4
1987	72.9	10.0
1988	115.3	15.4
1989	146.9	19.2
1990	185.4	24.1
1991	223.6	29.7
1992	281.8	36.8
1993	302.4	38.3
1994	332.1	41.1
1995	308.2	37.8

¹ Incidence rates represent the number of illness cases of disorders associated with repeated trauma per 10,000 full-time workers and were calculated as: $(N/EH) \times 20,000,000$, where

N = number of illness cases of disorders associated with repeated trauma

EH = total hours worked by all employees during the calendar year

20,000,000 = base for 10,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

NOTE: Excludes farms with fewer than 11 employees.

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ders associated with repeated trauma from 1976 to 1995.

Work-related repeated trauma disorder cases arise in a variety of ways. Most are caused, however, by free bodily motion which imposes stress or strain upon some part of the body due to a task's repetitive character. These cases are classified by BLS as occupational illnesses, meaning they arise from non-instantaneous exposures often spanning an extended period of time. Repeated trauma disorder is one of several terms used to describe these conditions. Other terms used include cumulative trauma disorder and repetitive stress disorder.

The most common repetitive task associated with repeated trauma disorders, according to BLS survey data, is placing, grasping, or moving objects other than tools (for example, scanning groceries at the checkout counter). Other work activities, such as typing or key entry, and repetitive use of tools also produce large numbers of repeated trauma disorder cases.

Background of the survey

The Survey of Occupational Injuries and Illnesses is a Federal/State program in which employer reports are collected from about 250,000 private industry establishments and processed by State agencies cooperating with BLS. Occupational injury and illness data for coal, metal, and nonmetal mining and for railroad activities are provided by the Department of Labor's Mine Safety and Health Administration and the Department of Transportation's Federal Railroad Administration. The survey, which measures non-fatal injuries and illnesses only, excludes the self-employed; farms with fewer than 11 employees; private households; and employees in Federal, State, and local government agencies.³

Industry experience

Disorders associated with repeated trauma tend to concentrate in manufacturing industries. The 25 private sec-

tor industries with the highest nonfatal illness incidence rates of disorders associated with repeated trauma in 1995 were all in manufacturing. (See table 2.) Of the 36 private sector industries (3-digit level) with 2,000 or more disorders associated with repeated trauma cases, 10 were outside of manufacturing. (See table 3.)

Meat packing plants, SIC 2011, have the highest incidence rate with 1,206.2 cases per 10,000 full-time workers. This was over a third higher than the next category, motor vehicles and car bodies, SIC 3711, with 885 cases per 10,000 full-time workers, and over 30 times the all private industry rate.

Employment—and thus exposure hours—in motor vehicles and equipment, SIC 371, which includes motor vehicles and car bodies, is twice that of meat products, SIC 2011, which includes meat packing plants. Consequently, even though the incidence rate for meat products is considerably greater than the incidence rate for motor vehicles and equipment manufacturing, motor vehicles and equipment manufacturing nevertheless accounts for more cases of disorders associated with repeated trauma than meat products. These two industries together account for over a quarter of repeated trauma disorder cases.

Conclusion

The 7-percent drop in the number of disorders associated with repeated trauma cases, from 332,100 in 1994 to 308,200 in 1995—and the 8-percent drop in the incidence rate from 41.1 cases per 10,000 full-time workers in 1994 to 37.8 in 1995—is a significant 1-year decline. But conclusions about future trends cannot be based on a single year's data. It is still too early to determine whether the drop in the number and rate of disorders associated with repeated trauma cases represents a leveling off after over a decade of increase, or a reversal of the trend consequent to ergonomic improvements, or an anomaly.

—ENDNOTES—

¹ Data are from the 1995 BLS Survey of Occupational Injuries and Illnesses.

² Includes, among others, carpal tunnel syndrome, noise-induced hearing loss, synovitis, tenosynovitis, bursitis, and Raynaud's phenomenon.

³ The annual survey provides estimates of the number and frequency (incidence rates) of workplace injuries and illnesses based on logs kept by private industry employers during the year. These records reflect not only the year's injury and illness experience, but also the employer's understanding of which cases are work related under current U.S. Department of Labor recordkeeping guidelines. The number of injuries and illnesses reported in any given year also can be influenced by changes in the level of economic activity, working conditions and work practices, worker experience and training, and the number of hours worked.

The survey measures the number of new work-related illness cases which are recognized, diagnosed, and reported during the year. Some conditions (e.g., long-term latent illnesses caused by exposure to carcinogens) often are

difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measures. The overwhelming majority of the reported new illnesses are those which are easier to directly relate to workplace activity (e.g., contact dermatitis or carpal tunnel syndrome).

The survey estimates of occupational injuries and illnesses are based on a scientifically selected probability sample, rather than a census of the entire population. These sample-based estimates may differ from the results which would be obtained from a census of the population. The sample used was one of many possible samples, each of which could have produced different estimates.

The data also are subject to nonsampling error. The inability to obtain information about all cases in the sample, mistakes in recording or coding the data, and definitional difficulties are examples of nonsampling error in the survey. Nonsampling errors are not measured. However, BLS has implemented quality assurance procedures to minimize nonsampling error in the survey.

Table 2. Industries with the highest nonfatal illness incidence rates of disorders associated with repeated trauma, private industry, 1995
(Employment and number of cases in thousands)

Industry ¹	SIC code ²	1995 Annual average employment ³	Incidence rate ⁴	Number of cases
All private industry ⁵		96,866.0	37.8	308.2
Meat packing plants	2011	143.5	1,206.2	18.4
Motor vehicles and car bodies	3711	358.9	885.0	31.7
Knit underwear mills	2254	22.4	786.3	1.6
Poultry slaughtering and processing	2015	235.5	623.5	14.4
Household laundry equipment	3633	16.7	592.4	.9
Men's and boys' underwear and nightwear	2322	24.1	469.0	1.0
Sausages and other prepared meats	2013	91.5	426.1	3.9
Household refrigerators and freezers	3632	29.7	388.2	1.1
Engine electrical equipment	3694	70.6	384.6	2.8
Men's and boys' trousers and slacks	2325	77.3	383.7	2.7
Motorcycles, bicycles, and parts	3751	20.8	371.5	.8
Automotive stampings	3465	115.3	352.0	4.2
Public building and related furniture	2531	42.7	347.3	1.4
Men's and boys' work clothing	2326	40.6	341.8	1.2
Household appliances, n.e.c.	3639	13.1	329.8	.4
Flat glass	3211	15.3	325.5	.5
Measuring and dispensing pumps	3586	5.5	316.5	.2
Motor vehicle parts and accessories	3714	511.9	304.6	16.5
Potato chips and similar snacks	2096	35.4	296.4	1.1
Men's footwear, except athletic	3143	25.4	267.8	.6
Women's footwear, except athletic	3144	16.9	262.3	.4
Household cooking equipment	3631	21.4	255.3	.5
Greeting cards	2771	27.6	251.8	.6
Refrigeration and heating equipment	3585	139.0	245.4	3.4
Leather tanning and finishing	3111	13.7	244.4	.3

¹ High rate industries were those having the 25 highest incidence rates for illness cases of disorders associated with repeated trauma at the most detailed or lowest SIC level at which rates are calculated and published. Generally, manufacturing industries were calculated at the 4-digit code level and the remaining industries at the 3-digit level based on the *Standard Industrial Classification Manual, 1987 Edition*.

² *Standard Industrial Classification Manual, 1987 Edition*.

³ Employment is expressed as an annual average and is derived primarily from the *BLS Current Employment Statistics* program.

⁴ Incidence rates represent the number of illness cases of disorders associated with repeated trauma per 10,000 full-time workers

and were calculated as: $(N/EH) \times 20,000,000$, where

N = number of illness cases of disorders associated with repeated trauma

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⁵ Excludes farms with fewer than 11 employees. n.e.c. = not elsewhere classified

Table 3. Industries with the highest number of nonfatal illness cases of disorders associated with repeated trauma, private industry, 1995
(Employment and number of cases in thousands)

Industry ¹	SIC code ²	Annual average employment ³	Number of cases	Incidence rate ⁴
All private industry ⁵		96,886.0	308.2	37.8
Motor vehicles and equipment	371	967.6	49.5	496.5
Meat products	201	470.5	36.7	772.0
Aircraft and parts	372	449.0	6.4	143.7
Men's and boys' furnishings.....	232	251.9	6.2	271.6
Hospitals	806	3,742.9	6.1	20.4
Miscellaneous plastics products, n.e.c.	308	709.5	5.9	82.7
Metal forgings and stampings	346	251.5	5.2	201.8
Grocery stores	541	2,983.2	5.1	24.0
Telephone communications.....	481	886.6	4.6	53.0
Electronic components and accessories	367	581.4	4.3	73.0
Household appliances.....	363	120.4	4.2	360.6
Knitting mills	225	196.7	4.1	212.8
Refrigeration and service machinery	358	201.6	4.0	198.9
Miscellaneous electrical equipment and supplies	369	156.2	3.9	248.1
Nonstore retailers	596	329.4	2.8	100.3
Department stores	531	2,327.4	2.7	16.3
Computer and data processing services	737	1,084.0	2.7	26.4
Medical instruments and supplies	384	263.8	2.7	104.1
Ship and boat building and repairing	373	158.3	2.6	168.7
Measuring and controlling devices	382	286.2	2.6	91.1
Household furniture.....	251	280.4	2.5	93.4
Miscellaneous fabricated textile products	239	221.7	2.5	118.2
Commercial printing	275	560.4	2.5	45.7
Cutlery, handtools, and hardware	342	128.0	2.4	190.6
Offices and clinics of medical doctors	801	1,609.9	2.4	17.8
Iron and steel foundries.....	332	130.2	2.4	173.6
Commercial banks	602	1,461.1	2.3	17.6
Computer and office equipment	357	350.0	2.3	67.5
Newspapers	271	445.7	2.3	62.5
Fire, marine, and casualty insurance	633	530.8	2.3	
Miscellaneous food and kindred products	209	180.4	2.1	123.1
Women's and misses' outerwear	233	276.0	2.1	82.3
Electrical industrial apparatus	362	157.4	2.1	134.5
Miscellaneous fabricated metal products	349	252.0	2.1	81.2
Bakery products	205	211.4	2.1	101.0
Air transportation, scheduled	451	626.3	2.0	36.2

¹ Industries with the highest number of illness cases of disorders associated with repeated trauma were determined by analysis of the number of cases at the 3-digit SIC code level. The analysis included those 3-digit industries which reported at least 2,000 cases of disorders associated with repeated trauma.

² *Standard Industrial Classification Manual*, 1987 Edition.

³ Employment is expressed as an annual average and is derived primarily from the BLS Current Employment Statistics program.

⁴ Incidence rates represent the number of illness cases of disorders associated with repeated trauma per 10,000 full-time workers

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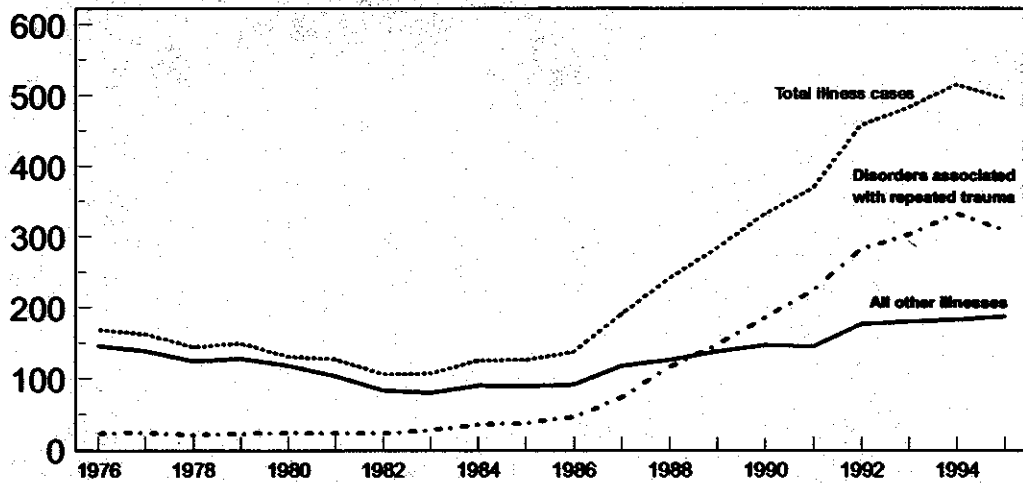
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Occupational illness cases, private industry, 1976-95



NOTE: Data for 1992-1995 exclude work-related fatalities.