

# Work-Related Injuries to Massachusetts Teens, 1987-1990

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*This study uses workers' compensation data to describe the work-related injury experience of Massachusetts teens, ages 14-17, from 1987 to 1990. During this period, 2,551 injuries were reported to the workers' compensation system. Injuries were more frequent among 16-17 year-olds and among males. Sprains and strains, followed by lacerations, were the most frequent type of injury. Four industries—grocery stores, restaurants, health services, and department stores—accounted for over half of all injuries. The overall injury rate was 1.9/100 full-time equivalents (FTEs), but was higher in the construction, manufacturing, and wholesale trade sectors. Teens working in apparel manufacturing and nursing homes sustained the highest rate of injuries. Geographical analysis indicated that teens living in the southeast region of the state had the highest injury rates. This study adds to the existing evidence that work-related injuries to teens are a substantial public health problem.*

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**KEY WORDS:** occupational injuries, adolescents, workers' compensation, surveillance

## INTRODUCTION

More than 4 million 16-17 year-olds, 60% of this age group, were employed at some time during 1989 [U.S. Bureau of the Census, 1992]. These teens worked an average of 24 hr per week for 25 weeks per year. These figures are even higher for Massachusetts, with 71% of 16-17 year-olds working 22 hr per week for 28 weeks per year. Nationally, almost 1 million 15 year-olds [U.S. General Accounting Office, 1991] and an unknown number of younger children also work.

State and federal child labor laws are intended to protect youth under the age of 18 from oppressive and dangerous working conditions. However, there is a growing body of evidence that teens routinely confront safety hazards on the job and that occupational injuries to working teens are a significant public health problem. The National Institute for Occupational Safety and Health (NIOSH) estimates that

64,000 14-17 year-olds were treated in hospital emergency departments for work-related injuries in 1992 [Layne et al., 1994]. A Massachusetts study, also based on emergency department data, found that between 7-13% of all medically treated injuries to 14-17 year-olds were work related [Brooks et al., 1993]. Workers' compensation records have also been used to characterize the problem. In 1988, 31,500 claims for injuries and illnesses to minors were filed in 26 states [U.S. General Accounting Office, 1990]. A study from New York reported that over 9,500 14-17 year-olds were awarded workers' compensation for occupational injuries from 1980 to 1987 [Belville et al., 1993]. Studies from Connecticut and Minnesota each identified approximately 800 work-related injuries to teens under the age of 18 per year [Banco et al., 1992; Parker et al., 1991].

In this study, state workers' compensation records are used to document the nature, extent, and industry distribution of work-related injuries to Massachusetts youth, 14-17 years old during 1987 to 1990. The data are also presented by geographic region within the state in order to identify communities where working teens are at high risk and might benefit from community-based prevention activities.

## MATERIALS AND METHODS

Massachusetts state law requires that all injuries occurring at or in the course of work which result in 5 or more

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lost work days, amputation, scarring, or permanent loss of function be reported to the Massachusetts Department of Industrial Accidents (MDIA). Some categories of workers, however, are not required to have workers' compensation coverage. Those with particular relevance to teens include babysitting or yardwork for a single family, newspaper delivery, and agricultural work on a family farm.

All employer first reports of injury, employee claims, and insurance company notifications are entered into a computerized database. The nature and body part of the injury are selected by the submitting entity (e.g., employer, attorney, insurer), using American National Standards Institute (ANSI) codes provided on the reporting form [ANSI, 1962]. Information from this database used in the present study includes the employee's date of birth, age, and city or town of residence; employer name and location; and nature, body part, and date of injury. Age is automatically calculated from the reported date of birth and date of injury. More detail on the MDIA system can be found elsewhere [Korrick et al., 1994].

For the present study, MDIA made available a dataset of 2,567 reported injuries and illnesses among 14–17 year-olds occurring during 1987–1990.<sup>1</sup> This represented all cases reported during this period, with the exception of an interval of approximately 6 months when a number of variables, including age, were not entered into the database for administrative reasons. In order to eliminate duplicate reports of the same injury, records in the MDIA database which matched on date of birth, gender, and town of residence were reviewed in greater detail. Sixteen records judged to be duplicates were removed. The final dataset consisted of 2,551 cases. Illnesses, which constituted fewer than 2% of cases, were not distinguished from injuries in this analysis.

Because information on industry classification in the MDIA database was either frequently missing or of insufficient detail for purposes of this study, one of the authors (D.R.B.) assigned industry codes based on employer name for all records, according to the Standard Industrial Classification (SIC) system [Office of Management and Budget, 1987].

Information on the number of 16–17-year-old teens working, weeks and hours worked, and industry and geographic distribution for 1989 was derived from the Census Bureau 5% Public Use Microdata Sample (PUMS) for Massachusetts [U.S. Bureau of the Census, 1992]. These data were assumed to be constant for the entire study period. Because the Census questionnaire asked for the age of household members as of April 1, 1990 while the questions used for determining employment referred to the previous calendar year, responses for 16–18 year-olds were used and

were weighted according to the average amount of time they would have been 16–17 years old in 1989.

Injury rates for 16–17 year-olds were calculated based on full-time equivalents (FTE), where 2,000 hr worked (40 hr per week for 50 weeks) equaled one FTE. Ninety-five percent confidence intervals for the number of FTEs worked were empirically determined using the bootstrap method, as recommended by the U.S. Bureau of the Census [1992].

For purposes of geographic analysis, injury rates were calculated based on the number of injuries and FTEs reported in each Public Use Microdata Area (PUMA). PUMAs, which are the smallest geographical unit in the PUMS file, include a minimum of 100,000 people. Massachusetts is divided into 351 cities and towns, which were grouped by the Census Bureau into 45 PUMAs. Because Massachusetts has no unincorporated areas (i.e., every resident can be assigned to a city or town), it was possible to assign each injured teen to a PUMA based on city or town of residence.

The injury experience of Massachusetts teens was also compared to data from the 1987 Supplementary Data System (SDS) [Bureau of Labor Statistics, 1990]. The SDS was a program in which state workers' compensation systems provided information from their files to the Bureau of Labor Statistics. In 1987, 24 states, not including Massachusetts, participated in the SDS program. For a fuller description of the SDS, see Schober et al. [1988].

## RESULTS

Of the 2,551 work-related injuries to teens reported to MDIA during the study period, injuries to 16–17 year-olds comprised 90% of the total (Table I). Males were injured almost twice as frequently as females, although information on gender was missing for almost 50% of cases. Sprains/strains and lacerations comprised the majority of injuries, accounting for one-third and one-fourth of all injuries, respectively. Contusion/crushing, fractures, and heat burns constituted the next leading types of injury. There were 17 reported amputations during the period of the study, 14 of them to the finger.

Almost half (45.0%) of all sprains/strains occurred to the back. Approximately 80% of all lacerations occurred to the hand and/or finger. The primary locations of fractures were relatively evenly distributed among the finger (16.1%), hand (13.3%), wrist (13.3%), and foot (11.5%). About 40% of heat burns occurred to the hand and/or finger, while 12.4% injured multiple parts of the body.

Slightly more than half of all injuries occurred in the retail trade sector, followed by services (20.2%) and manufacturing (11.0%). Retail trade accounted for greater than 60% of injuries among 14–16 year-olds, but slightly less than half of all injuries among 17 year-olds. Four industries accounted for over half of all injuries: grocery stores

<sup>1</sup>For ease of reference, the word "teens" is used to refer to this particular age group throughout the remainder of this paper.

**TABLE I.** Characteristics of Work-Related Injuries Among 14–17 Year-Olds Reported to the Massachusetts Department of Industrial Accidents, 1987–1990

	Number (%)
<b>Age (Years)</b>	
14	62 (2.4)
15	191 (7.5)
16	781 (30.6)
17	1,517 (59.5)
<b>Gender</b>	
Male	848 (33.2)
Female	459 (18.0)
Missing/unknown	1,244 (48.8)
<b>Injury type</b>	
Sprain/strain	845 (33.1)
Laceration	620 (24.3)
Contusion/crushing	399 (15.6)
Fracture	218 (8.5)
Burn—heat	121 (4.7)
Dislocation	32 (1.3)
Burn—chemical	29 (1.1)
Multiple injury	22 (0.9)
Hernia	20 (0.8)
Amputation	17 (0.7)
Dermatitis	15 (0.6)
Concussion	14 (0.5)
Other	168 (6.6)
Missing/unknown	31 (1.2)
<b>Industry sector</b>	
Agriculture	30 (1.2)
Construction	117 (4.6)
Manufacturing	280 (11.0)
Transportation/utilities	50 (2.0)
Wholesale trade	90 (3.5)
Retail trade	1,412 (55.4)
Finance/real estate	28 (1.1)
Services	516 (20.2)
Public administration	12 (0.5)
Missing/unknown	16 (0.6)

(22.0%), restaurants/food service (17.0%), health services (10.4%), and department stores (5.8%). These industries accounted for approximately 38% of all hours worked by Massachusetts teens. Proportionately more Massachusetts teens were injured in grocery stores and health services than in the 24 SDS states, where these industries accounted for 11.4% and 2.9% of teen injuries, respectively. Proportionally fewer Massachusetts teens were injured in restaurants, which accounted for 39.0% of injuries in the SDS states.

More detailed analysis of industry and injury type in the

Massachusetts data revealed some interesting patterns. Lacerations were the leading type of injury in agriculture, construction, and public administration, while sprains/strains were the most common in all other industry sectors. The proportion of injuries categorized as sprains/strains ranged from 18.8% in the construction industry to 46.3% in service industries (Table II). Sprains/strains were the most common type of injury in nursing homes (64.0%), hospitals (44.2%), department stores (40.0%), and supermarkets (35.3%), but lacerations (33.7%) were the most common in restaurants. Heat burns also accounted for 17.7% of injuries in restaurants.

Injury rates could only be determined for 16–17 year-olds. The overall injury rate was 1.9/100 FTE; the rate for males was twice as high as that for females (Table III). While most injuries occurred in retail trade and services, construction (3.2/100 FTE), manufacturing (3.0/100 FTE), and wholesale trade (3.0/100 FTE) had the highest rates of injury. Among industries in which teens reported a minimum of 200 FTEs worked, the highest injury rates were reported in apparel manufacturing (5.4/100 FTE), nursing homes (4.3/100 FTE), hotels/motels (3.9/100 FTE), hospitals (3.6/100 FTE), food manufacturing (3.3/100 FTE), and grocery stores (3.3/100 FTE). Drug stores, apparel stores, and gas stations had the lowest reported rates of injury.

The geographic areas with the highest rate of injury clustered in the southeast region of the state (Fig. 1). Ten of the 12 PUMAs with the highest rates were located in this region. The three industry sectors with the highest injury ratios—construction, manufacturing, and wholesale trade—comprised a greater proportion of the total FTE's worked in the 12 high-rate PUMAs than in the rest of the state (18.0% vs. 10.6%), while employment in the service industry accounted for a lesser proportion (19.1% vs. 26.9%). Consistent with employment data, a greater proportion of injuries in the high-rate PUMAs occurred in manufacturing (14.0% vs. 9.2%) and a lower proportion in service industries (15.6% vs. 23.2%). One-third (43/130) of manufacturing injuries in the high-rate PUMAs occurred in apparel manufacturing.

## DISCUSSION

During the period covered by this study, more than 700 Massachusetts teens per year had injuries reported to the state workers' compensation system. Many of the patterns of injury evident in Massachusetts are consistent with those seen in other studies published on injuries to teens using workers' compensation records [Banco et al., 1992; Belville et al., 1993; Parker et al., 1991; Schober et al., 1988]. Older teens (16–17 year-olds) accounted for 90% of injuries in all studies; data from two studies which included injury rates among younger teens suggest that this appears to be due to a higher injury rate among older teens and not just a func-

**TABLE II.** Nature of Injury by Industry Sector Among 14–17 Year-Olds Reported to the Massachusetts Department of Industrial Accidents, 1987–1990\*

Agriculture (n=30)		Construction (n=117)	
Laceration	26.7%	Laceration	27.4%
Sprain	23.3%	Sprain	18.8%
		Fracture	15.4%
		Contusion	14.5%
Manufacturing (n=280)		Transportation/utilities (n=50)	
Sprain	33.2%	Sprain	46.0%
Contusion	19.6%	Contusion	16.0%
Laceration	18.2%	Fracture	10.0%
Fracture	10.7%		
Wholesale trade (n=90)		Retail trade (n=1412)	
Sprain	31.1%	Sprain	29.2%
Laceration	21.1%	Laceration	29.0%
Fracture	17.8%	Contusion	17.3%
Contusion	16.7%	Fracture	7.6%
		Burn (heat)	5.9%
Finance/real estate (n=28)		Services (n=516)	
Sprain	35.7%	Sprain	46.3%
Laceration	25.0%	Laceration	13.4%
		Contusion	13.4%
		Fracture	7.2%
Public administration (n=12)		Burn (heat)	5.4%
Laceration	41.7%		

\*Presented for injuries with five or more cases comprising 5% or more of each industry.

tion of the fact that they work more [Belville et al., 1993; Parker et al., 1991]. Males sustained the largest number of injuries, which again reflected a higher injury rate than females [Belville et al., 1993; Schober et al., 1988]. In all studies, over half of all injuries were concentrated in the trade sector.

Massachusetts differed from the pattern seen nationally and in most other state studies in that sprains/strains, rather than lacerations, were the leading cause of injury. This may be at least partly due to differences between Massachusetts and other states in the employment pattern of the teen workforce. Comparisons with U.S. Census data indicate that Massachusetts teens worked somewhat more in grocery stores, department stores, hospitals, and nursing homes (21% vs. 16%), where sprains/strains were more common, and somewhat less in restaurants (17% vs. 24%), which had a higher proportion of lacerations.

Despite the different methods and data sources used to calculate measures of the number of teens working, there appears to be a consistency in reported injury rates for 16–17 year-olds across studies using workers' compensation data. Two other studies have used FTEs as a basis for measuring work exposure [Parker et al., 1991; Schober et al., 1988], while another two studies calculated rates based on the number of working teens regardless of the amount of

time worked [Banco et al., 1992; Belville et al., 1993]. FTEs in these latter studies can be estimated using as a rule-of-thumb that 16–17 year-olds work on average approximately half-time for half the year [U.S. Government Accounting Office, 1991; unpublished data based on analyses of 1990 Census and Current Population Survey data], so that the number of FTEs equals approximately one fourth of the number employed.

Based on this equivalency, the FTE injury rate in the latter two studies can be approximated by multiplying the rate based on the number of working teens by four. Injury rates then fall into two ranges. Studies for which no minimum number of lost workdays were required to be eligible for workers' compensation had rates between 5–10 injuries/100 FTE [Banco et al., 1992; Schober et al., 1988], while the present study in Massachusetts and other studies based on more restrictive criteria (i.e., minimum workdays missed ranging from 3–8) all found 1–2 injuries/100 FTE [Belville et al., 1993; Parker et al., 1991].

These ranges of rates are generally similar to those reported in studies using emergency department records [Coleman and Sanderson, 1983; Layne et al., 1994], although one study in Massachusetts reported much higher rates [Brooks et al., 1993]. Both workers' compensation and emergency department record studies report rates substan-

**TABLE III.** Rate of Work-Related Injuries Among 16–17 Year-Olds Reported to the Massachusetts Department of Industrial Accidents, 1987–1990

	FTEs <sup>a</sup>	Injuries per year	Rate/100 FTE (95% CI)	
Overall	33,896	657	1.9	(1.9–2.0)
Gender <sup>b</sup>				
Male	16,676	426	2.6	(2.5–2.7)
Female	17,220	231	1.3	(1.3–1.4)
Industry sector				
Construction	1,020	32.9	3.2	(2.4–4.8)
Manufacturing	2,417	73.7	3.0	(2.3–4.5)
Wholesale trade	781	23.7	3.0	(2.2–4.7)
Transportation/utilities	614	14.0	2.3	(1.7–3.4)
Retail trade	18,185	352.6	1.9	(1.5–2.8)
Services	8,450	137.7	1.6	(1.2–2.3)
Agriculture <sup>c</sup>	618	7.7	1.2	(0.9–2.0)
Public administration	338	2.6	0.8	(0.6–1.3)
Finance/real estate	1,229	7.7	0.6	(0.5–0.9)
Mining	39	0.0	0.0	
Industry <sup>d</sup> (SIC code) <sup>e</sup>				
Apparel manufacturing (23)	248	13.4	5.4	(3.6–10.6)
Nursing home (805)	1,064	45.7	4.3	(3.3–6.0)
Hotel/motel (7011)	297	11.4	3.9	(2.7–7.0)
Hospital (806)	747	26.6	3.6	(2.7–5.3)
Food manufacturing (20)	235	7.7	3.3	(2.2–6.5)
Grocery store (5411)	4,237	139.1	3.3	(3.0–3.6)
Department store (5311)	1,604	36.9	2.3	(1.9–2.9)
School (8211)	318	6.6	2.1	(1.4–4.1)
Restaurant/food service (58)	5,339	102.0	1.9	(1.8–2.1)
Printing/publishing (27)	361	6.9	1.9	(1.3–3.4)
Misc amusement/rec service (7911, 7941–7999)	797	8.0	1.0	(0.8–1.2)
Retail bakery (5461)	542	5.1	0.9	(0.7–1.5)
Gas station (5541)	689	4.3	0.6	(0.4–1.2)
Apparel store (5611–5651, 5699)	1,037	4.3	0.4	(0.3–0.5)
Drug store (5912)	1,068	2.9	0.3	(0.2–0.3)

<sup>a</sup>FTE = full-time equivalents. Based on reported employment status in 1989 in Bureau of Census Public Use Microdata Sample (5%) for Massachusetts.

<sup>b</sup>Because information on gender was missing for almost half of injuries, it was assumed that the distribution of injuries when gender was unknown was the same as when it was known.

<sup>c</sup>Does not include injuries sustained working on family farms, which are not covered by the workers' compensation system.

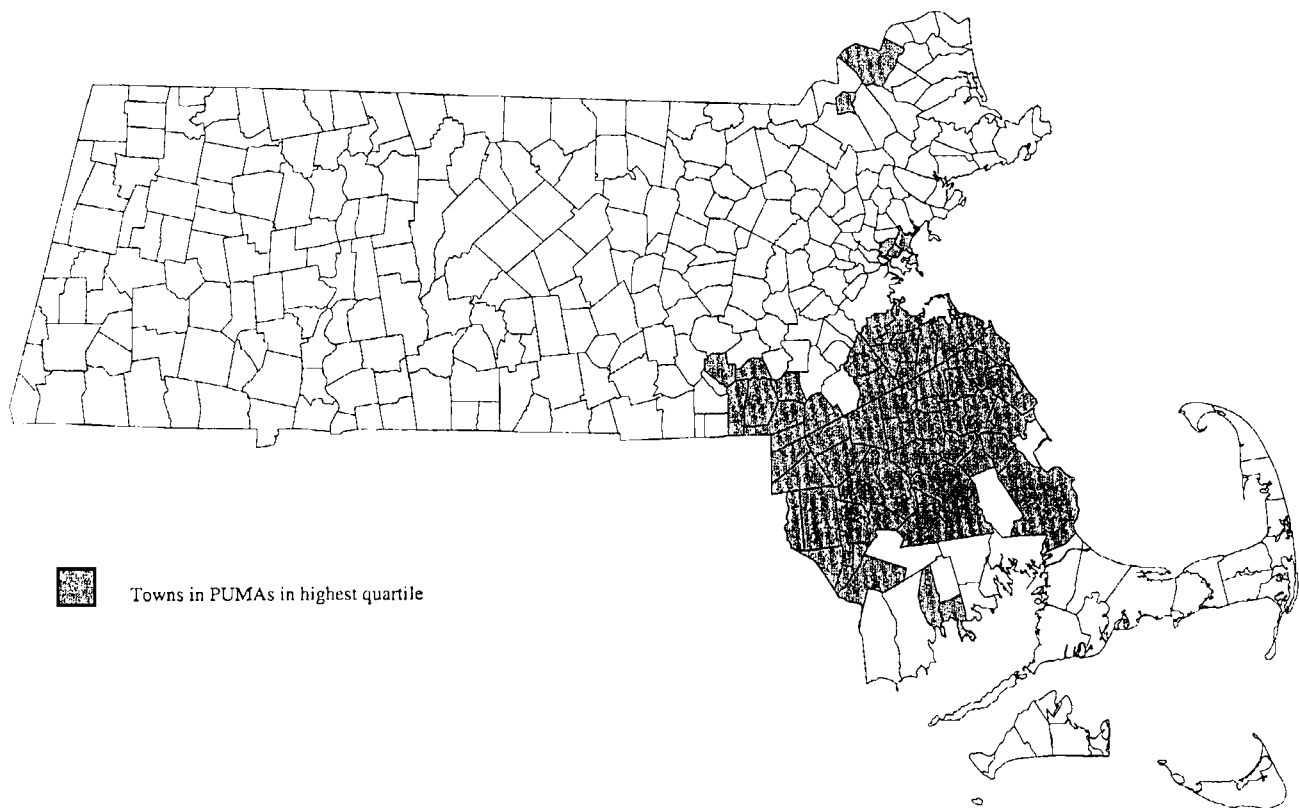
<sup>d</sup>For industries with a minimum of 200 FTEs.

<sup>e</sup>SIC = Standard Industrial Classification.

tially lower than those found in studies using data collected by survey [Glor, 1989; Parker et al., 1994a]. Both data sources share the limitation that they do not capture the full range of work-related injuries to teens, emergency departments because only a minority of occupational injuries are treated there [Coleman and Sanderson, 1983], and workers' compensation systems because of their higher threshold for inclusion, as well as other factors (e.g., illegal employment,

fear of job loss, compensation being handled "off the books," etc.) which may affect the completeness of reporting.

Over half of all injuries in the present study were concentrated in just four industries—grocery stores, restaurants, health services, and department stores—partially reflecting the concentration of teens in these industries. However, even considering the large proportion of total



**FIGURE 1.** Number of Work-Related Injuries per 100 FTE by Census Public Use Microdata Area (PUMA) Among 16–17 Year-Olds Reported to the Massachusetts Department of Industrial Accidents, 1987–1990.

hours worked by teens in these industries, the number of injuries was still disproportionately high.

Nursing homes not only accounted for a significant number of injuries but also had the second highest rate. Approximately 37% of these injuries were sprains/strains to the back. Insufficient information was available concerning the circumstances of these injuries, which may range from slips and falls in the kitchen to injuries sustained in the act of moving patients. Further research should focus on the activities of teen workers in nursing homes, including not only the potential for injury but also for exposure to blood-borne pathogens and other infectious agents. It should be noted that at least four states have prohibited teens from working in occupations, such as nursing aides or orderlies, which may involve exposure to body fluids and infectious agents [U.S. Department of Labor, Wage and Hour Division, 1994].

Back sprains/strains accounted for 15% ( $n=377$ ) of all injuries reported during this period. In a Minnesota study of injuries reported to the workers' compensation system, sprains/strains to the back comprised 28% of all injuries and 39% of injuries classified as severe [Parker et al., 1994b]. Back injuries were directly related to the amount of weight lifted at work and inversely related to the size of the individual.

Injuries to the back are a cause for concern, because they may increase the risk of future injury. Back pain is generally uncommon in the teenage years, and first episodes of back pain usually occur after the age of 20 [Kelsey and Golden, 1988]. Evidence from several studies conducted in various settings indicates that a history of prior back problems is one of the strongest predictors of new back injuries [Mitchell et al., 1994; Venning et al., 1987].

While the number of injuries are greatest in the retail and service sectors of the economy where teens have been employed in the greatest numbers in recent years, teens are still at risk in manufacturing. Eleven percent of all injuries reported to the MDIA during the period of this study occurred in manufacturing industries. Apparel manufacturing had the highest rate of any industry and was responsible for the largest number of injuries, but food processing, printing and publishing, fabricated metal, and lumber and wood products industries all contributed substantially to the total. Many occupations and work processes, especially in the manufacturing sector, are prohibited for minor workers. Without more detailed knowledge of the circumstances of these injuries, it is not possible to determine what proportion of these injuries involved employment in violation of federal or state child labor laws as opposed to permitted, albeit possibly hazardous, jobs.

Analysis by town of residence indicated that the injury rate among working teens was highest in the southeast region of the state. This was consistent with the fact that employed teens in this area worked a greater proportion of hours in industry sectors which had high injury rates. This region is also characterized by a higher proportion of its residents working in blue-collar occupations, lower per capita income, and a higher unemployment rate than the state as a whole. In addition, more than half of employment in the apparel manufacturing industry among Massachusetts workers of all ages is concentrated in this region of the state [U.S. Bureau of the Census, 1993].

Identification of areas with high rates of injury is useful for targeting community-based interventions, such as school programs. Occupational health and safety training and education or other interventions are usually focused on the workplace. However, schools and other community-based settings are natural places to reach working teens, many of whom, because they work on a part-time or temporary basis and often for small employers, may not be provided with even fundamental information regarding workplace health and safety. In addition, recent federal legislation, such as the School-to-Work and Perkins Acts, creates a legislative imperative to include health and safety training in school-sponsored vocational or work-based learning programs.

There are a number of limitations and potential biases in the present study, the most important of which is that these injuries only represent the most serious end of the spectrum, since they only include those severe enough to cause 5 missed days of work. In a study of Connecticut workers' compensation data, which included all injuries regardless of whether any days of work were missed, only 10% resulted in even 3 or more lost workdays [Banco et al., 1992].

Secondly, not all working youth are covered by the Massachusetts workers' compensation system. For example, newscarrriers are typically hired as independent contractors and are therefore not eligible for compensation. Likewise, teens working on family farms are excluded from workers' compensation coverage. As a result, injuries in the agricultural sector may be particularly underrepresented. Because Massachusetts is a highly urbanized state, this is likely to be less of a problem in the present study than in other states with larger agricultural sectors.

Furthermore, even those injuries which meet Massachusetts workers' compensation eligibility criteria are probably underreported, because it is likely that reports are not filed for many teens, either because compensation is handled informally by the employer or because the teen does not receive any compensation at all. In a study comparing hospital emergency department (ED) and workers' compensation records in Ohio [Fingar et al., 1992], teens seen in the ED were less likely than adult workers to be captured in the workers' compensation system [Fingar, unpublished data].

In a study of visits to Massachusetts EDs, the proportion of work-related injuries with workers' compensation listed as the expected payor was lower for 14–17 year-olds than for 18–19 year-olds [Brooks et al., 1993].

Diseases caused by exposure to hazardous agents may be particularly under represented in this study. Although no studies have investigated the extent of underreporting of work-related diseases specifically among teens, diseases among workers of all ages are known to be inadequately captured by workers' compensation systems [National Research Council, 1987]. Commonly cited reasons include a lack of training and awareness on the part of physicians of the link between work and various diseases, the long latency period which often ensues between exposure and the development of disease, difficulties in proving a causal link between work and disease for conditions which may be multifactorial in origin, and systemic disincentives for both employers and employees to report. For longer-latency conditions, the significance of workplace exposures to teens may be particularly obscured and underappreciated because of the length of time before manifestation of disease.

Other limitations of this study include lack of information on occupations, sources, and circumstances of injuries which would provide a better understanding of the causes of these injuries and how to prevent them. Also, calculation of injury rates is hindered by a number of factors, including the lack of information on younger teens and limitations in the Census questionnaire's ability to capture the experience of working teens who, because they are just transitioning into the workforce, exhibit more irregular patterns of employment than adult workers. National efforts to improve the collection and availability of data on teen employment are warranted.

Bias in reporting could also potentially impact the findings in this study. Some of the differences in injury rates seen in different industries may partly reflect differential reporting. For example, teens working in gas stations, which would appear to be a relatively hazardous environment, had one of the lowest reported injury rates. Whether this reflects a truly lower incidence of injury or an artifact of lower reporting compliance is impossible to judge. In addition, teens who are illegally employed or who work for employers who try to avoid the workers' compensation system will also be underrepresented. Further research is needed to examine the nature and magnitude of biases associated with using workers' compensation data to characterize the injury experience of working teens.

## CONCLUSIONS

This study adds to the existing evidence that work-related injuries to teens are a substantial public health problem that demands our attention. Findings underscore previous reports of teen injuries in restaurants and grocery and

department stores, and draw new attention to the potential hazards confronted by youth employed in nursing homes and hospitals, as well as in traditional industries such as apparel manufacturing. More information based on interviews with teens and workplace evaluations is necessary to identify specific factors leading to these injuries and to guide the development of educational, regulatory, and technological interventions to prevent occupational injuries to youth in the future. Findings also demonstrate the potential utility of examining injury patterns by geographic regions within states in order to target community-based prevention programs. Innovative approaches to addressing occupational health and safety of teens at the community level, such as school-based health and safety education activities, need to be developed.

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