Health and Safety of Young Workers

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Youth Employment and the Health and Safety Issues of Young Workers in the U.S. and Canada: An Overview

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The following is a summary and update of overview presentations held at *Symposium I: Youth Employment in Developmental Context*. The purpose of these overview presentations was: a) to provide the context for youth employment in the U.S. and Canada; b) describe the extent and patterns of youth employment in each country; c) differentiate the policy environments affecting young workers in each country; and d) describe the hazards to which teens are exposed and the nature and magnitude of health outcomes associated with adolescent work injury in each country.

United States

Definition and Distinguishing Characteristics for Young Workers

There are a variety of definitions and age ranges for the term "young workers." For the purposes of the U.S. portion of this paper, young workers are defined as those less than 18 years of age. This definition reflects the ages at which most youth are engaged with the public educational system in the U.S. This definition also reflects the age at which U.S. child labor laws govern the types of permissible and prohibited employment for youth. With the exception of information on child labor laws, the information presented in this portion of the paper is broadly, but not exactly comparable, to the expanded age range up to 24 years of age (another common definition for young workers, including among many papers in this Proceedings.) For example, workers in their early 20s in the U.S. differ from adolescents in the amount of time they work and reasons for working, though the types of workplaces and jobs are similar, as are patterns of injury.

Similar to most adults, youth in the U.S. work to earn money. Both youth and their parents also recognize the positive role of work in building character, gaining job skills and as a step towards independence. While a primary motivator for work for youth and adults is money, how youth spend their money differs from adults, and is important for understanding the social context in which youth work in the U.S. Previous surveys of high school seniors, those students who are in their last year of public education in the U.S. and who are generally about 17 years of age, have demonstrated that working youth use their earnings primarily for personal items and car expenses (Table 1) [NCES 2012a]. For example, in 2001, 60% of working high school seniors reported that they spent at least half of their earnings on personal items and 27% reported spending at least half of their earnings on car expenses (Table 1). Findings from this survey demonstrate that relatively small proportions of U.S. youth are contributing most of their earnings to family expenses, or towards saving for a college or trade education. There are differences by sociodemographic characteristics, however. For example, a higher proportion of

black youth contributed at least half of their earnings to family expenses compared to all youth on average.

Table 1. Percent of U.S. Working High School Seniors Spending at Least Half of Their Earnings on Selected Categories, 2001

	Total	White Non-Hispanic	Black Non-Hispanic
Savings for education	17%	17%	21%
Car expenses	27%	29%	25%
Long range savings	19%	17%	24%
Personal items	60%	58%	69%
Family expenses	13%	8%	29%

Source: University of Michigan, Institute for Social Research, Monitoring the Future, 2001.
Adapted from: National Center for Education Statistics. Youth Indicators, 2005: Trends in the Well-Being of American Youth, Indicator 38: Spending Patterns of High School Seniors. Responses are not mutually exclusive, thus totals do not sum to 100. [http://nces.ed.gov/programs/youthindicators/Indicators.asp?PubPageNumber=38&ShowTablePage=TablesHTML/38.asp]. Date accessed: September 2012

There are a number of characteristics that differentiate young workers from their more mature counterparts in U.S. workplaces besides how earnings are spent. Youth are a unique segment of the workforce, with limited work experience, different patterns of employment from adults, and for the youngest workers less than 15 years of age, potentially unique risk factors for injury and illness associated with physical and psychosocial development. The need to balance demands of school and work also differentiates youth from older workers. And, in the U.S., there are regulations specific to young workers in addition to occupational safety and health regulations that apply to workers of all ages.

Protection of Young Workers

In the U.S., young workers are protected from work-related safety and health hazards by two sets of laws. Young workers are protected by occupational safety and health regulations which apply to youth as well as adult workers, and children and adolescents under 18 years of age are afforded additional protection through child labor laws. Whereas occupational safety and health regulations dictate conditions for safer work, such as what types of training and personal protective equipment are needed for specific types of work, child labor laws operate under the principle that some types of work are simply too dangerous for youth. Child labor laws identify the types of work that youth are allowed and not allowed to do.

Occupational safety and health regulations and child labor laws exist at both the federal and state levels in the U.S. The federal government provides oversight on occupational safety and health regulations and grants authority to some states to promulgate their own regulations that must be at least as protective as the federal regulations. Federal and state child labor laws have different jurisdictional coverage. For federal child labor laws to apply, there must be some type of commerce between states. When a youth's work is covered by both federal and state child labor laws, the stricter law applies. Many states require work permits or certificates that indicate approval of parents and/or schools for school-aged youth to work.

U.S. federal child labor laws are bifurcated with different standards for children working in nonagricultural and agricultural occupations [WHD 2007, 2010]. The standards for nonagricultural occupations were primarily established in the late 1930s and 1940s, with few substantive revisions until recently [WHD 2012a]. The standards for agricultural occupations were promulgated in the early 1970s, without substantive revisions in the subsequent years. The differences between these two sets of standards include the minimum ages at which youth can work, and whether youth working for their parents are subject to the laws.

In nonagricultural occupations, youth 14- and 15-years of age are permitted to work in a limited set of jobs (for example most office jobs and many jobs in retail settings) with restrictions on the hours they may work, including restrictions against working during school hours and during late evening and early morning hours [WHD 2010]. The federal child labor laws do not regulate the hours that 16- and 17- year olds may work, though some state child labor laws do. At 16 years of age, youth are allowed to work in all nonagricultural occupations except 17 different types of work which have been declared by the U.S. Secretary of Labor to be especially hazardous. Examples of work that are prohibited for youth less than 18 years of age, termed Hazardous Orders in the U.S. federal child labor laws, include work in coal mining, logging and sawmilling, and work with power-driven woodworking machines.

In agricultural occupations, youth working for their parents are exempt from the federal child labor laws [WHD 2007]. Youth as young as 10 years of age are allowed to work in a limited set of jobs, with permission from their parents. An example of such permissible work is hand harvesting on small farms outside of school hours. At 14 years of age, youth are allowed to do work outside of school hours for all work except that which has been declared by the U.S. Secretary of Labor to be especially hazardous, termed Hazardous Orders. An example of work prohibited for youth less than 16 in agriculture is operating a tractor over 20 horsepower, though there is an exception which allows this work if the youth has taken a certified tractor operation class.

In 1998, a blue ribbon panel organized by the National Research Council (NRC) made a number of recommendations for improving young worker safety. One recommendation was for the Department of Labor to periodically review the adequacy of Hazardous Orders with input from the National Institute for Occupational Safety and Health (NIOSH), the U.S. federal agency responsible for research on worker safety and health [NRC 1998]. NIOSH provided the Department of Labor with a report in 2002 [NIOSH 2002]. NIOSH recommendations were based on analysis of numerous databases, and reviews of hundreds of scientific articles and publications. The recommendations included modifications to existing Hazardous Orders, as well as recommendations for an additional 17 Hazardous Orders. For each recommendation, NIOSH summarized relevant data and research.

There have been recent changes to child labor laws at the federal and state levels that are responsive to NIOSH recommendations or have been fostered by state level activities. In 2010, the Department of Labor enacted the most sweeping revisions to federal child labor laws in 30 years, including 25 changes for nonagricultural occupations recommended by NIOSH [WHD 2012a]. There have also been revisions to state child labor laws, including comprehensive changes in Massachusetts [Massachusetts Labor and Workforce Development 2013].

Non-regulatory Efforts to Improve Young Worker Safety

There are numerous efforts in the U.S. to improve young worker safety by non-regulatory means. These include efforts by public and private sectors.

At the federal level, the Department of Health and Human Services (DHHS) has set decennial goals to reduce the incidence of work-related injuries among adolescent workers. The current goal is to reduce work-related injuries among workers 15 to 19 years of age by 10% (from 2007 baseline levels) by 2020 [Healthy People 2020]. DHHS efforts to achieve these goals are centered within NIOSH (an agency within DHHS). NIOSH collects and supports data collection to monitor trends and emerging issues, funds research to understand contributing factors and to identify promising prevention strategies, and works with partners in the public and private sectors to encourage science-based prevention [NIOSH 2012a]. Notable NIOSH efforts include: supporting surveillance of young worker injuries to foster state-level prevention efforts [Commonwealth of Massachusetts 2012a, Davis and Vautin 2012, Oklahoma State Department of Health 2006, Oregon Department of Human Services 2008, OR-FACE 2009, Walters et al. 2010]; a comprehensive national initiative that has contributed to reductions in childhood agricultural injuries [CDC 2011, NIOSH 2012b]; and the development and promotion, with partners, of curricula that can be used to provide basic occupational safety and health information to teenagers [NIOSH 2012c]. The Department of Labor is also involved in non-regulatory efforts to improve young worker safety, has websites with numerous resources targeted to employers, parents, educators and youth [OSHA 2012, WHD 2012b], and supports a regional training center focused on young worker safety [CWYSH 2012]. And, numerous state entities are involved in promoting young worker safety, including agencies and groups in California [LOHP 2012], Massachusetts [Commonwealth of Massachusetts 2012b], Oregon [Oregon Health Authority 2012, OYWHSC 2012], and Washington [University of Washington 2012, WA DLI 2012].

Private sector groups are also involved in efforts to raise awareness of young worker safety issues. These include insurance companies [State Compensation Insurance Fund 2012, Texas Mutual Insurance Company 2012], professional associations such as the American Society for Safety Engineers [ASSE 2012], and non-profit groups such as the Child Labor Coalition [CLC 2012] and National Council for Occupational Safety and Health [NCOSH 2012]. Activities include periodic public service announcements, journal articles, safety pamphlets and fact sheets, poster contests, presentations, resources for employers, and training materials for young workers.

Young Worker Employment

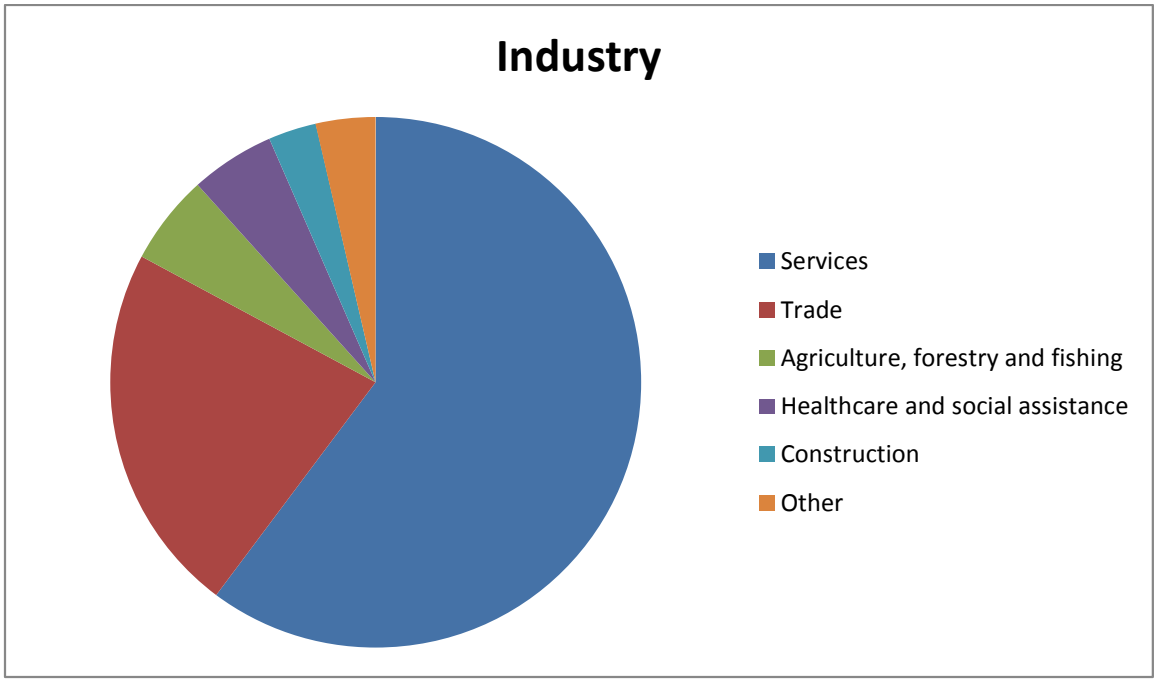
In the U.S., formal employment of youth less than 18 years of age is common and increases with age throughout the teen years. Formal employment of teenagers begins as early as the 9th grade, or about 14 years of age. For the period 1997 through 2003, nearly 80% of students had worked by the time they finished their high school education as 12th graders or seniors, about 17 years of age [BLS 2005]. Young worker participation in the work force has been relatively high in the United States compared to other developed countries [NRC 1998].

The U.S. economic downturn has impacted youth employment, with substantial decreases in the percentage of employed 16- and 17-year-old students in the past few years [NCES 2012b]. There are differences in student employment by race. In 2009, 20% of white 16- and

17-year-old students were employed compared to 9% of similarly aged black students, 9% of Hispanic students and 6% of Asian students.

In 2010, an estimated 1.4 million youth aged 16-17 years were formally employed in the United States, with those working in nonagricultural industries working an average of 16.8 hours per week [BLS 2012a]. Young workers have different patterns of employment than older workers, including the types of industries where they work and their occupations. Young workers are most commonly employed in the services and trade sectors in the United States, with lesser but significant numbers employed in other industry sectors such as healthcare and social assistance, construction and agriculture (Figure 1). Most youth employed in services are employed in food services, and most employed in trade are in retail trade. Fifty-nine percent of all employed 16- and 17-year olds were employed in food services and retail trade in 2011. The most common occupations of employed 16- and 17-year olds in 2011 were: food preparation and service (31%) and sales (23%) [NIOSH DSR 2012]. The workplaces and types of jobs held by youth influence the types of hazards they are exposed to, and the resultant injuries.

Figure 1. Employment of 16- and 17-year-olds by Industry Sector in the U.S., 2011



Source: Bureau of Labor Statistics, Current Population Survey. Unpublished analyses of 2011 Current Population Survey micro data by NIOSH Division of Safety Research, 2012. Note: Distribution is based on full-time equivalents (FTE; 1 FTE= 2,000 hours worked per year in their primary job).

Official U.S. employment statistics exclude youth less than 15 years of age who are known to work, especially in agriculture and informal employment. NIOSH has conducted periodic surveys of farm operators to estimate the numbers of youth who live and work on farms, and associated injuries. NIOSH estimates that more than 360000 youth less than 16 years of age worked on farms in 2009, with only 10% of these youth reported as hired workers (versus working on their family's farm) [NIOSH 2012d]. In contrast, 43% of the estimated 197000 16- and 17-year-olds who worked on farms were hired. Numbers of youth working on farms has decreased by about 1/3rd between 2001 and 2009.

Work-related Injuries

The intent of this section of the paper is to provide an overview of the burden and patterns of injuries to workers less than 18 years of age in the U.S. The paper by Davis and Vautin [2012] in these Proceedings does an excellent job of describing available U.S. data on young worker injuries, presenting key statistics, and identifying the strengths and limitations of different data sources. Readers should refer to the Davis and Vautin paper for additional data on young worker injuries and a more comprehensive treatment of the methods, strengths and limitations of various data sources.

Work-related injuries are typically defined in the U.S. as injuries to workers sustained in the course of work. Injuries associated with commuting to and from work, and injuries to bystanders who are not working at the time of the injury, are excluded. For the most part, work-related injury data are for formal work where there is an established employer-employee relationship. Data include injuries in family businesses, most commonly on family farms.

The U.S. has a comprehensive data system for work-related injury deaths, the Census of Fatal Occupational Injuries (CFOI), operated by the Bureau of Labor Statistics (BLS) within the Department of Labor. There are no minimum age requirements and the system includes deaths of the youngest workers (e.g. less than 16 years of age). In contrast, there is not a single definitive source of data on nonfatal work injuries. Rather, data are available from several agencies and data sources, each of which provides a limited view of the nonfatal work-related injury problem, with minimal attention to addressing injury severity and long-term outcomes. There are youth-specific concerns for some of the available data. Some data systems do not report data for youth less than 16 years of age. And, injuries associated with informal youth employment, such as lawn care, are not covered by systems based on employer reports and may not be captured in other systems such as emergency department-based systems. Piecing available data together provides insight into the size of the problem and patterns of work-related injuries, but must be recognized as incomplete with significant gaps [Davis and Vautin 2012].

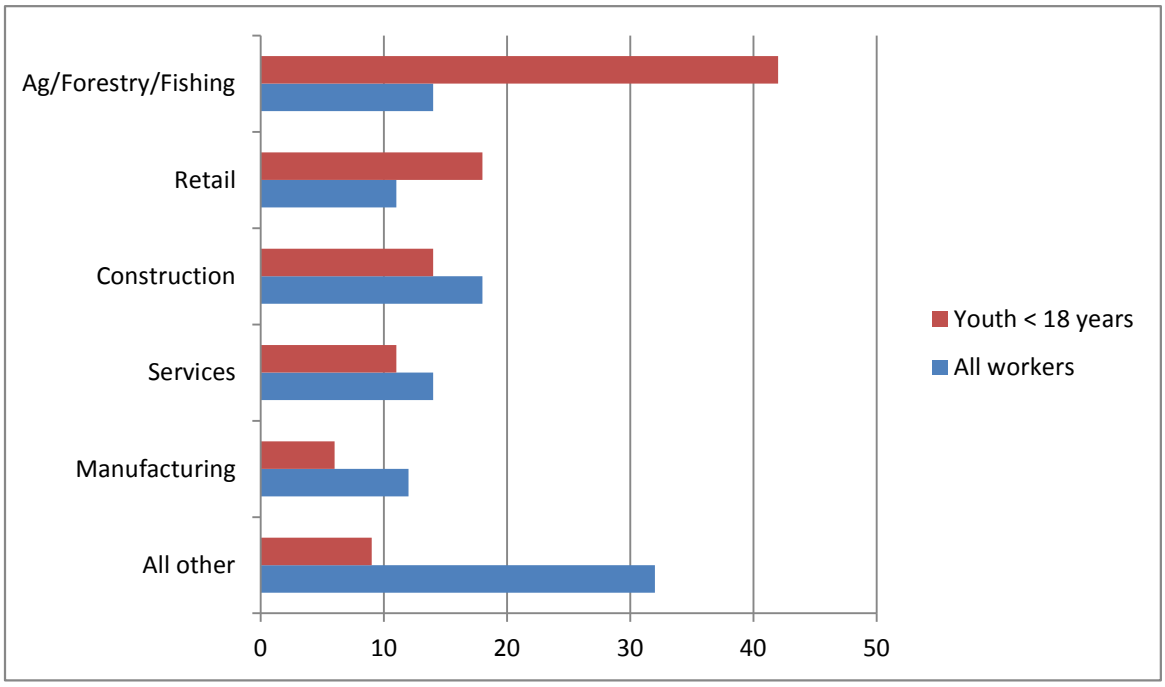
In 2010, 34 youth less than 18 years of age died from injuries sustained at work in the U.S [Davis and Vautin 2012, BLS 2012b]. Nearly half (16) were younger than 16 years of age. Estimates of nonfatal work-related injuries among youth are available from a variety of sources. Variability in these estimates can largely be attributed to differences in the types of injury or workers included in each system. For example, in 2009, the BLS estimated 4350 injuries that resulted in at least one day from work among workers less than 18 years of age based on reports from private industry employers. That same year, an estimated 26600 youth less than 18 years of age were treated in emergency departments for work-related injuries [Davis and Vautin 2012]. There is overlap in types of injuries captured by each system (e.g. injuries report-

ed by employers that resulted in at least one day away from work and also resulted in emergency department treatment), however, there are cases that would be in one system and not the other (e.g., cases reported to an employer that were not treated in an emergency department or treatment in an emergency department without any lost work days.) Additionally, there are work-related injuries that would not be captured in either system (e.g. injuries to youth that were treated in a medical clinic and did not result in any time away from work.) Thus, the number of work-related injuries to youth less than 18 years of age undoubtedly exceeded the estimated 26600 injuries treated in emergency departments in 2009, but it is unknown by how much.

Work-related injury deaths have a different epidemiology than nonfatal injuries. This is the case for young workers as well as older workers. With the exception of 15 year olds, work-related fatality rates generally increase with age with the highest rates amongst the oldest workers (e.g. > 65 years of age) [Davis and Vautin 2012, Windau and Meyer 2005]. Rates for youth aged 16- and 17-years have been reported to be lower than those of young and middle-aged workers (20 through 44 years of age) while rates for 15 year olds have been reported to be higher than young and middle-aged workers. The absence of employment data for youth younger than 15 precludes the ability to calculate a rate for the youngest workers. The relatively small difference in risk between adolescents and young and middle-aged adults, about 20% [Barkume 2000], is cause for concern. Adolescents under 18 years of age are prohibited by child labor laws from working in many of the most hazardous jobs. Though violations occur, and result in serious injury and death, employment data suggest that youth work to a lesser extent than adults in the most dangerous industries. If we look at the industry sectors with the highest fatality rates (mining, construction, transportation and agriculture) in 2004, the last year in the analysis which contrasted the rates of 15-year-olds with older workers [Davis and Vautin 2012; Windau and Meyer], only 8% of youth worked in these industries compared to 15% of adults, an approximate 2-fold difference [NIOSH DSR 2007].

The types of events leading to young worker injury deaths are similar to those for adults with the three leading events for both youth and adults: events associated with transportation, such as operating motor vehicles and industrial vehicles, assaults, and contact with objects and equipment [BLS 2012b, CDC 2010, NIOSH 2003]. However, distribution of deaths by industry sector differs (Figure 2). Past research has shown that agriculture accounts for more young worker deaths than any other industry and a much higher proportion of young worker deaths compared to adult workers [NIOSH 2003]. The proportion of youth killed in retail was greater than for adults, whereas lower proportions of youth were killed in construction, services and manufacturing compared to adults.

Figure 2. Industry Distribution of Work-related Injury Deaths for Youth (< 18 years of age) and All Workers, U.S., 1992-2000



Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries Special Research Files, analysis by NIOSH.
Note: Data exclude New York City deaths.
Adapted from: NIOSH [2003]. NIOSH Alert. Preventing deaths, injuries and illnesses of young workers. Cincinnati, OH: National Institute for Occupational Safety and Health, NIOSH Pub. No. 2003-128. [http://www.cdc.gov/niosh/docs/2003-128/pdfs/2003128.pdf] Date accessed: October 2012.

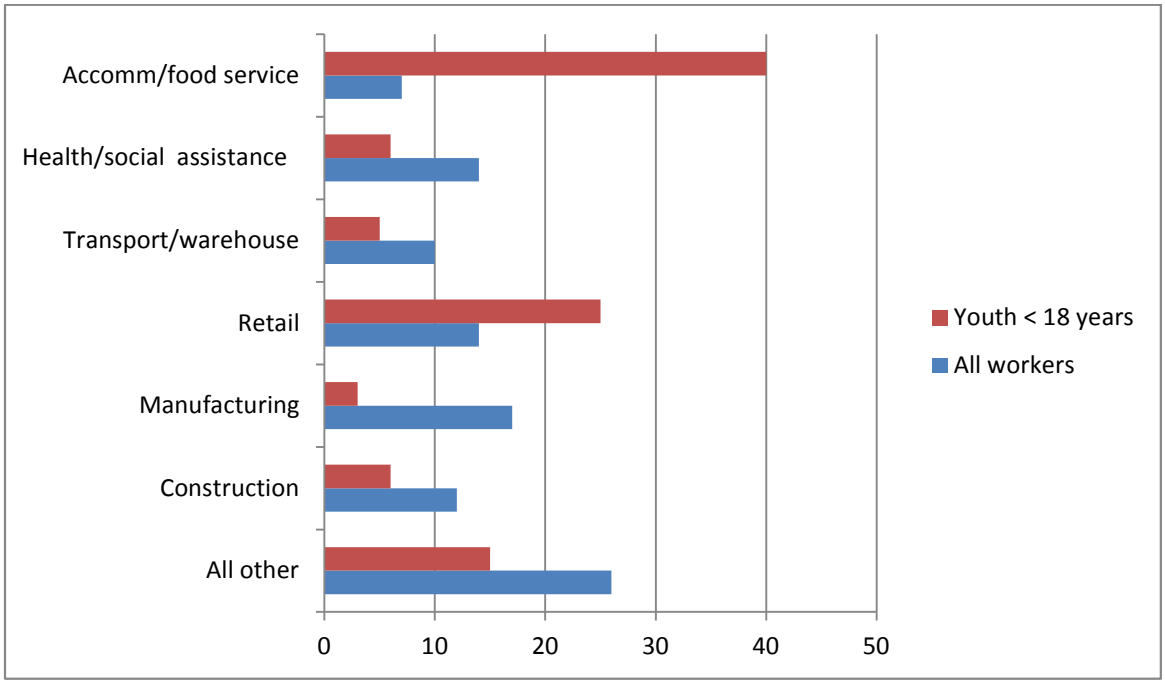
Young worker deaths in agriculture are noteworthy. In addition to accounting for the largest number of deaths of any industry, previous research has suggested that the fatality rate is about four times greater than for youth working in other industries [Barkume et. al. 2000, Hard and Myers 2006] and comparable to the risk for young and middle-aged workers in agriculture. Nearly 2/3rds of the deaths in agriculture occurred among youth less than 16 years of age [Windau and Meyer 2005]. Nearly 60% of the deaths of youth in agriculture occurred on family farms. Farm family workers accounted for nearly 25% of all young worker deaths from 1998 to 2002.

Young worker fatality rates in the construction industry are also noteworthy. Youth working in construction were seven times more likely than their peers working in other industries to die on the job [Barkume 2000]. Additionally, data suggest that youth construction workers (ages 15 to 17 years) had twice the risk for dying as young and middle-aged construction workers (18 to 44 years of age).

Available data on nonfatal injuries suggest that youth generally have higher rates of nonfatal work-related injuries than older workers [Davis and Vautin 2012, NIOSH 2003], with workers 15- 17-years of age having approximately twice the rate of workers aged 25 years and older [CDC 2010]. While it is difficult to describe precisely the distribution of the types of injuries sustained by young workers given the different data sources, both emergency department data

and data based on employer reports suggest that the leading types of young worker injuries are sprains/strains, lacerations, burns and abrasions [Barkume 2000, Commonwealth of Massachusetts 2012a, Windau and Meyer 2005]. Both emergency department data and data reported by employers identify the most common events leading to injury as contact with objects and equipment, falls, and bodily reaction/overexertion [CDC 2010, Windau and Meyer 2005]. Most nonfatal injuries among young workers occur in the accommodations/food services sector, followed by the retail trades [Commonwealth of Massachusetts 2012, Windau and Meyer 2005] (Figure 3).

Figure 3. Industry Distribution of Nonfatal Injuries with Days Away from Work Reported by Employers, U.S., 2003.



Source: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses.
Adapted from: Windau and Meyer [2005]. Occupational injuries among young workers. Monthly Labor Review 128(10):11-23. [http://www.bls.gov/opub/mlr/2005/10/art2full.pdf] Date accessed: October 2012.

A national survey of youth working in retail and services conducted by Runyan and others [2007] provided information on the tasks that youth were performing in these jobs, as well as levels of training and supervision. This study demonstrated that youth performed a variety of tasks at work, and that there were differences by gender. For example, the study found that 84% of young female workers handled cash compared to only 43% of young males. In contrast, young males were more likely than females to lift heavy objects at work, and to work from heights. This study also found large proportions of youth doing work prohibited by federal child labor laws, and disappointing levels of safety training and supervision. Fifty-two percent of males and 43 percent of females reported doing tasks prohibited by federal child labor laws, such as using food slicers and operating box crushers. The study also found that young male

workers were more likely to receive safety training than young females, but that young females received more supervision than males.

Canada

Young Workers

For decades, young people have represented a significant proportion of the Canadian workforce. Workplace experiences can begin as young as 12 years of age, and continue through most of one's life course. In Canada, at both the federal and provincial/territorial levels, young workers are defined as being between the ages of 15 and 24 [Lewko et. al. 2011]. Of the 18.7 million workers in the Canadian workforce in 2011, 2.8 million (16.6%) of them were young workers, representing about two-thirds of Canadian youth [Statistics Canada, 2011a CANSIM table 282-0087].

There are currently no national large-scale surveys pertaining to youth workforce participation in Canada, nor is there a single source to which one can turn for a national picture of youth at work and their exposure to hazards. This reflects the fact that labor, and hence workplace issues are, for the most part, a provincial/territorial responsibility. The government of Canada establishes basic labor guidelines that pertain to youth under the age of 17, while the 10 individual provinces and 3 territories address specific youth workplace conditions and occupations. Statistics Canada, through its Canadian Labour Force Survey and Census, provide basic statistics and the Association of Workers' Compensation Boards of Canada (AWCBC) compile data from the 13 separate provincial/territorial workers' compensation boards on a range of factors that also include young workers. Two national surveys include a series of questions relating to youth employment (National Longitudinal Survey of Children and Youth - NLSCY; Canadian Community Health Survey - CCHS). However, neither of these surveys is specific to young workers, which complicates any effort to depict young workers at any level of detail. For farming, Canadian Agricultural Injury Reporting (CAIR) provides a national picture through its integrated surveillance project.

Protection of Young Workers

In Canada, the primary responsibility for occupational health and safety in workplaces rests with the 13 individual provincial and territorial governments. While the federal government provides a basic framework for protecting youth under the age of 17, each province/territory establishes a comprehensive set of regulations that govern workplace health and safety in general, and in some cases, young workers specifically. Only a small percentage of the legislation affecting young workers in Canada is administered at the federal level. The Canadian approach of provincial/territorial primacy in occupational health and safety differs from the U.S. approach that is more heavily guided by federal government legislation.

The focus of the Canadian federal legislation is on 1) promoting education and 2) protecting the health and safety of youth through controlling the type or quality of work that young people can undertake. The greatest percentage of legislation affecting young workers originates from the Canadian Labour Standards Code and its accompanying regulation. Simply stated, persons under the age of 17 can work, but only in occupations specified by regulation (any office or plant, in any transportation, communication, maintenance or repair service, or in any construc-

tion work or other employment in a federal work, undertaking or business). In addition, they may be employed in such occupations only if they are not required by their provincial law to be in attendance at school, the work they are employed in is not contrary to prohibitions, the work is not in an underground mine, and it is not likely to be injurious to their health or endanger their safety [Canadian Labour Standards Regulation (s. 10 (1) (a-b))]4. According to the same legislation sources, persons under 17 years of age are restricted from working between 11:00 p.m. and 6:00 a.m. in any occupation. [Canadian Labour Standards Regulation (s. 10 (2))]4.

There are several age restrictions with respect to explosives at the federal level worth mentioning. Persons under 16 years of age are not to be employed or permitted to enter any dangerous building (except in the presence and direct supervision of an individual over the age of 21) [Explosives Regulation (s. 80)]5. Persons under 18 years of age cannot be in charge of or drive a vehicle transporting explosives or look after a vehicle transporting explosives overnight [Explosives Regulation (s. 63)]5. Persons under 21 years of age cannot be employed to drive a land vehicle transporting more than 2,000 kg of explosives [Explosives Regulation (s. 65)] 5.

Each province and territory builds on the basic framework of the federal government by establishing more detailed occupational health and safety regulations that specify the conditions of work, such as working at heights, and the rights and responsibilities of the worker, the employer, the Joint Health and Safety Committee, and in many cases, the supervisor. For example, Section 27 of the Ontario Occupational Health and Safety Act addresses the duties of supervisor, which applies to workers of all ages. In Section 27, specific mention is made of ensuring that a worker "b) uses or wears the equipment, protective devices or clothing that the worker's employer requires to be used or worn" as well as other duties such as advising in regard to potential or actual danger or providing written instructions [Ontario Ministry of Labour, 1990].

Promotion of education is advanced through compulsory school attendance and by restricting the amount of time that a young worker is permitted to spend on a job, given a particular age. Compulsory attendance (not working during the school day, unless the work is part of a learning experience) is set at 16 years of age for all jurisdictions other than Ontario and New Brunswick where the attendance requirement is under 18 years. Provinces and territories vary in the amount of time that a youth can work outside of the compulsory school hours, taking into account whether the work is being done on the same day as school, on a non-school day, over a number of school days, totalling of school and work time, total hours worked over 5 school days or over a week without 5 school days. Ontario and the Yukon Territory use only the federal time requirement that youth less than 17 years of age are not allowed to work between 11pm and 6am. The provinces and territories vary with respect to time restrictions by age (12-15 years in 2 provinces; <14 in 2 provinces; <16 years in 5 provinces; 15-18 years in 1 province; <18 years in one province).

Protection of health and safety takes the form of legislation designed to control the quality of work that youth are allowed to perform. The various jurisdictions have used the Canada Labour Regulations which stipulate that "the work is not likely to injure health or endanger safety" in framing their own policies, that vary between jurisdictions. The recent review of legislation and policies [Lewko et al. 2011] reveal that, in addition to specifying the types of jobs that youth can enter, other conditions prevail at times, including consent for parent/guardian or a director in the jurisdiction, and supervision of training. There are 28 different occupations identified in the legislation across the Canadian jurisdictions. Entry to most jobs is controlled by a

combination of age restriction and exception. For example, working in construction is totally prohibited in three provinces for youth under 16 years of age, and one province for youth under 18 years, while two provinces permit youth under 16 years and one province permits youth under 14 years to work in construction with parent/guardian consent.

The young worker policies that are similar across Canada are those that prohibit the employment of children and adolescents (1) bound by compulsory education, (2) in work that is dangerous to their health, safety, well-being or development, and (3) from handling or serving alcohol in licensed premises. All follow the federal legislation that persons bound by compulsory attendance are not to work during the time they are required to be at school. Alberta, British Columbia, Saskatchewan, Ontario and the Territories default to the federal policy with respect to the health and safety of young workers. However, half of Canada's jurisdictions have enacted additional policy to help protect young workers, which usually accompanies their respective Employment Standards or Labour Standards legislation. Policies on liquor and alcohol are determined at the provincial level and are somewhat consistent across the nation with minors prohibited from employment that handles or serves alcohol in licensed premises.

There are a number of additional factors across the country that are worth noting. Time restrictions imposed at the federal level state that no person under 17 years of age may work between 11:00 p.m. and 6:00 a.m. Every other jurisdiction except the Yukon Territory adds provisions of various types to protect young workers. The majority of the jurisdictions require written consent of a parent or guardian, and in some cases permission of the director, for a young worker to enter into a contract of employment. The majority of the time, written consent is required from the parent by the employer in order to permit a person who is younger than the prohibited employment age to work. Orientation and training are not consistent across the nation and supervision policies also vary by province. The most stringent of supervision policies comes from British Columbia where every general worker under the age of 18 must be supervised by an adult at least 19 years of age. British Columbia is unique in that employment legislation is in effect for both children employed generally and for children employed in the entertainment industry. Prince Edward Island is comparable in that it requires supervision of all work performed by workers less than 16 years of age. The rest of the supervision legislation across the country is limited in the sense that supervision is only required for certain work, ages, or time blocks.

Movement has been taking place in the legislation/policy areas that affect young workers. In British Columbia, the Occupational Health and Safety Regulation was amended in 2007, which expanded Part 3 to include "young" worker and the category of "new" worker [WorkSafeBC, 2012]. A new worker is anyone who is: new to the workplace, returning to a workplace at which hazards in that workplace have changed, affected by a change in the hazards of a workplace, or relocated to a new workplace (if hazards in that workplace are different from the hazards in the worker's previous workplace). In 2010, the Province of Ontario conducted a comprehensive review of Ontario's occupational health and safety system [Expert Advisory Panel on Occupational Health and Safety, 2010]. As a result, the category of "new" worker was incorporated with the policies pertaining to young workers.

Saskatchewan has new occupational health and safety legislation that requires young workers to obtain a certificate of employment before they can be employed in the province in most situations. All workers who are 14 years of age will have to provide their employer with a *Youth*

Worker Readiness Certificate Course which includes (1) proof of age, (2) written consent from a parent or guardian and (3) a copy of their certificate. In addition the employer must keep the certificate in the employer record in case of future inspection.

Finally, the Youth Employment Act in the Province of Prince Edward Island is of particular interest because it is the only Act in Canada regarding occupational health and safety that focuses solely on youth. The occupational health and safety officer is capable of carrying out measures to ensure a youth's employment conditions meet the prescriptions of both the Youth Employment Act and the Occupational Health and Safety Act of the Province

Non-regulatory Efforts to Improve Young Worker Safety

In Canada, much of the non-regulatory efforts directed towards young workers come from the Worker's Compensation Boards of the individual provinces and territories. The Association of Workers Compensation Boards of Canada (AWCBC) recently completed a National Government/WCB Young Worker Health & Safety Initiatives/Program Inventory that lists resources owned or managed by Canadian governments or Workers' Compensation Boards [AWCBC 2012a]. A large number of resources are organized around five themes: 1) programs or initiatives aimed at schools; 2) programs or initiatives aimed at employers and workers; 3) general project initiatives and programs that raise awareness on young worker health and safety issues and social marketing; 4) programs/resources aimed at parents of young workers; and 5) research. The AWCBC website [2012a] also identifies links to 22 other programs, such as Passport to Safety, or resources such as the Institute for Work and Health at the University of Toronto, that are relevant for young worker health and safety.

Young Worker Employment

For decades, young people between the ages of 15 and 24 have represented a significant proportion of the Canadian workforce. In 2011, there were approximately 1,240,000 males and 1,230,500 Canadian females ages 15-24 years who had jobs [Statistics Canada, 2011a]. As Table 2 demonstrates, the employment rates for young Canadians have been relatively stable over the past several years. Approximately two-thirds of both females and males participate in the labor force, indicating that employment continues to be an important source of influence on youth development.

Table 2. Canadian Labour Force Participation (%) by Sex and Age, from 2007 to 2011 (Young Workers, ages 15 – 24 years)

	2007	2008	2009	2010	2010
Men 15-24	67.4	68.0	65.7	64.4	64.7
Women 15-24	66.5	67.0	65.2	64.6	64.4

Source: Statistics Canada 2011b, CANSIM, table 282-0002

The National Longitudinal Study of Children and Youth is the only data set that provides limited workforce data for the widest range of Canadian young workers, from ages 12 to 21 years. Not surprisingly, participation increased with age, from 32.9% at 12 years to 94.4% at 21 years in 2005. As participation increases, so does the amount of time that Canadian youth spend at work. Virtually all of the working 12 year olds (92.9%) spend very few hours (less than 10) at work.

Table 3. Full-time and Part-time Employment by Sex for 15-24 Year Olds, Canada, 2011

	Men	**Women**	**Total**
Full-time employment	747 300	551 800	1 419 800
Part-time employment	492 800	678 700	1 116 000
Total	1 276 900	1 258 900	2 535 800

Source: Statistics Canada, 2011b CANSIM, table 282-0002.

As Table 3 shows, more males than females had full-time employment, while more females than males were employed part-time. Although the number of hours worked per week does not greatly differ between males and females for part-time work (less than 40 hours per week), males are more likely to work an excess of 40 hours per week than females (38% and 21%, respectively). This may reflect the gender differences in post-secondary school attendance, with more females than males attending, and completing, both secondary and post-secondary levels of education.

The large majority of youth enter the paid work force through the service sector, in such areas as accommodation and food services and the retail trades. The service sector is the largest employer of youth in Canada (54.5%), with accommodation and food services being the most important employer within the service sector (21%). Males and females are not equally represented within the various occupational sectors. More males tend to work in the physical labor-intensive jobs such as construction and mining (28%, compared with 8% of females), whereas females tend to work in service sector settings more than males (64% and 45%, respectively). Although, in general, occupational sector does not differ according to age, physical labor-intensive jobs employ more young adult males than adolescent males (59% and 49%, respectively).

A more detailed picture that is specific to the service sector is presented in Table 4. The data are drawn from a survey of working youth in the Province of Ontario in 2008 [Lewko et al. 2010] and reflects the dominant role that the service sector, and in particular the restaurant and food service sector, plays in the early workplace learning experiences of youth.

Table 4. Youth Employment in the Service Sector in Canada 2008.

Type of business/service	Proportion of sample (%)
Restaurant and Foodservice	52.70
Retail and Wholesale Distribution	16.30
Tourism and Hospitality	10.40
Offices and Related Services	1.84
Vehicle Sales and Service	1.18
Other	16.60

School Attendance

The CCHS national survey in 2005 reports that the majority (63%) of working youth were attending school, most of whom worked part-time (70%). Nearly a third (30%) of youth who are in school also work full-time. In general, more females than males are in school. The proportions of males and females working part-time and full-time are fairly equal, whether they are attending school or not, with the exception of young adult females who are more likely to work full-time and attend school then males.

In 2008, a large majority of Ontario teens (91%) reported working later than 7:00 PM on an evening before school and also reported working 2 or more nights during school. Most of these young workers were employed in the service sector, which exposed them to many types of hazards, some of which can lead to injury, or even death [Lewko et al. 2010; Statistics Canada, 2010c].

Work-Related Injuries

Canadian data on young worker injuries is diffuse and distributed across various sources. Injury statistics compiled at the federal level focus on federal jurisdiction industries, such as air transport, road transport, broadcasting, federal public service, and others, in which young workers would not be typically employed. Therefore, efforts to present a 'national' picture of youth workplace injuries relies on various sub-sets such as the Association of Workers' Compensation Boards of Canada, Statistics Canada, and the NLSCY and Canadian Community Health Survey.

Statistics on injuries and fatalities indicate that youth continue to work in various settings where they are exposed to hazardous conditions that can lead to injury or death. Across Canada in 2006 there were 15000 claim injuries (payment for loss of wages or permanent disability) from adolescents aged 15-19 (Table 5) and 35976 claims injuries from young adults aged 20-24 (Table 6). The increase is due to regulations on types of work allowed at older ages. Both tables provide an indication of the type of work environment from which the injuries were generated. For both age categories of Canadian young workers (15–19; 20-24 yrs), retail trade and manufacturing were common workplace sectors where injuries occurred. Data from the two national studies (NLSYC and CCHS) revealed that on-the-job injuries accounted for 8.6% of the reported youth injuries. An additional 3.1% occurred while travelling to and from work. The data show that workplace injuries generally increase with age, with young adult workers being injured at a rate 1.5 times that of adolescent workers (3.9/100 workers vs. 2.6/100 workers). With respect to gender, for both adolescents and young adults, males are more likely to suffer a

workplace injury than females, with young adults accounting for more injuries. Adolescent and young adult female injury rates do not differ.

Table 5. Accepted Claim Injuries for 15-19 Year Olds, Canada 2006

Industry	Males	Females	Unknown	Total
Retail Trade	2 276	1 354	18	3 648
Manufacturing	2 507	373	9	2 889
Accommodation, food and beverage services	1 417	1 402	19	2 838
Construction industries	1 415	58	12	1 485
Wholesale retail	765	128	5	898
Other	2 121	896	12	3 029
Total	**10 501**	**4 211**	**75**	**14 787**

Source: AWCBC 2012b: National Work Injury Statistics Program

Table 6. Accepted Claim Injuries for 20-24 Year Olds, Canada 2006

Industry	Males	Females	Unknown	Total
Manufacturing	7 083	1 138	17	8 238
Retail Trade	3 915	2 089	33	6 037
Construction industries	4 974	219	27	5 220
Accommodation, food and beverages services	1 563	1 749	27	3 339
Wholesale retail	1 955	272	13	2 240
Other	6 578	4 280	44	10 902
Total	**26 068**	**9 747**	**161**	**35 976**

Source: AWCBC 2012b: National Work Injury Statistics Program

Tables 7 and 8 identify the types of injuries that were the bases of accepted claims. Consistent with the large presence of young workers in the service sector, the major types of injuries were of the 'sprains and strains' type as well as 'cuts and bruises', with males out-pacing the females by over 2 to 1. Of particular note is the exposure to more hazardous conditions that result in injuries that can impact future development and hence life chances. Both the adolescent (15-19) and young adult (20-24) workers sustained injuries of a traumatic nature.

Table 7. Nature of Accepted Claim Injuries for 15-19 Year Olds, Canada 2006

Nature of injury	Males	Females	Unknown	Total
Traumatic injuries to muscles, tendons, ligaments, joints, etc.	3 206	1 525	24	4 755
Open wounds	2 245	685	14	2 955
Surface wounds and bruises	1 798	574	9	2 381
Burns	592	453	13	1 058
Traumatic injuries to bones, nerves, spinal cord	786	230	0	1 016
Other	1 874	744	15	2 622
Total	**10 501**	**4 211**	**75**	**14 787**

Source: AWCBC 2012b: National Work Injury Statistics Program

Table 8. Nature of Accepted Claim Injuries for 20-24 Year Olds, Canada 2006.

Nature of injury	Males	Females	Unknown	Total
Traumatic injuries to muscles, tendons, ligaments, joints, etc.	10 189	4 592	74	14 855
Surface wounds and bruises	3 956	1 291	15	5 262
Open wounds	4 214	858	18	5 090
Traumatic injuries to bones, nerves, spinal cord	2 015	375	8	2 398
Other traumatic injuries and disorders	1 424	475	20	1 919
Other	4 270	2 156	26	6 452
Total	**26 068**	**9 747**	**161**	**35 976**

Source: AWCBC 2012b: National Work Injury Statistics Program

While Tables 7 and 8 do not provide much insight into the nature of the trauma, the following two tables take us somewhat beyond the 'cause' category of the injury. Examination of Table 9 and Table 10 reveals that both age groups experienced traumatic force to the head and spine that could have had long-term negative implications for the young workers who were involved.

Table 9. Part of Body Affected for Accepted Claim Injuries for 15-19 Year Olds, Canada 2006

Part of Body	Males	Females	Unknown	Total
Head and neck	1 019	316	9	1 344
Back/spine/spinal cord	1 811	790	14	2 615
Upper extremities	4 286	1 663	30	5 979
Trunk	776	267	6	1 049
Lower extremities	2 125	810	14	2 948
Multiple body parts	358	250	1	609
Other	126	115	1	243
Total	**10 501**	**4 211**	**75**	**14 787**

Source: AWCBC 2012b: National Work Injury Statistics Program

Table 10. Part of Body Affected for Accepted Claim Injuries for 20-24 year olds, Canada 2006

Part of Body	Males	Females	Unknown	Total
Head and neck	2 740	855	20	3 615
Back/spine/spinal cord	5 689	2 635	40	8 364
Upper extremities	8 264	2 575	38	10 877
Trunk	2 454	980	22	3 456
Lower extremities	5 458	1 715	32	7 205
Multiple body parts	1 160	712	9	1 881
Other	303	275	0	578
Total	**26 068**	**9 747**	**161**	**35 976**

Source: AWCBC 2012b: National Work Injury Statistics Program

Traumatic injuries, such as those associated with the head and neck and back/spine/spinal cord, often result in complications that have long-term consequences and substantial costs. When both categories are combined, they account for 27% of the accepted injury claims from the 15-19 year olds and 33% of the claims from the injured 20-24 year olds. This suggests that there may be a more serious undercurrent to the young worker injury dilemma than the 'sprains and strains' and 'cuts and bruises' mentioned previously. Underscoring this position is the recent research on occupational traumatic brain injury both in Canada [Colantonio et al. 2009] and the U.S. [Tiesman et al. 2011]. Each study represents the first in their respective countries and reinforces the importance of recognizing that traumatic injuries vary across levels of severity and hence differential long-term consequences and costs.

Similar to the earlier information on young workers in the U.S. each year, a number of Canadian young workers are fatally injured while working. However, unlike the fatality data available in the U. S., national data in Canada is more limited. The most accessible source of data on young worker fatalities comes from the Association of Workers' Compensation Boards of Canada (AWCBC), which collects information from all workers' compensation boards across the na-

tion. The AWCBC reports that 109 young workers died during the 2008-2010 time frame. Thirty-one were youth ages 15-19 years, while the 20-24 year group accounted for 78 fatalities. No more detailed information is publically available regarding these fatalities. It can be assumed that a large number of these fatalities would have occurred in the Province of Ontario, where the Ministry of Labour reports 16 fatalities in the 15-24 year age group between 2008 and 2010.

Agricultural-related injuries led to 248 deaths in the 1-15 year age group across Canada between 1990-2008. A majority of the fatalities (81%) were males and 44% of the fatalities were children under 5 years of age (5-9 yrs – 32%; 10-14 yrs – 24%). While most fatalities were related to work done by the child (71%), in 79% of these situations, someone other than the child was doing the work that led to the fatality. [CAIR, 2011]

Conclusion

This overview of youth employment and health and safety issues of young workers in the U.S. and Canada demonstrates many similarities, and some differences. Despite the different definitions of young workers used in the U.S. and Canadian overviews, the predominance of young worker employment in services and retail trades is clear. Another similarity is engagement of both the public and private sectors indicating broad interest in improving the safety and well-being of young workers in both countries. Data limitations are another similarity. The absence of comprehensive injury data, and limited ability to identify the most severe and disabling injuries, hamstring the ability within both countries to use data to guide research and prevention. Though available data provide some insights into the burden and patterns of injury in each country, there are significant gaps that may be obscuring large numbers of injuries among some groups and may result in some compelling young worker injuries not being addressed.

There are substantive differences in the legal frameworks for protecting young workers in each country, with U.S. efforts largely centered in the federal government and Canadian efforts more centered in the provinces and territories. Despite the difference in legal frameworks and though the specifics vary, both countries include provisions to limit work interfering with the schooling of teenagers and to limit youth from working in especially dangerous work.

In conclusion, there are more similarities than differences in young worker experiences between the U.S. and Canada. This illustrates the potential for joint efforts in research and prevention and speaks to the value of this U.S. - Canadian series of symposia. There is undoubtedly much that we can learn from each other and opportunities to leverage our mutual interests.

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