Occupational Health Trends Report
North Carolina

2003 – 2008

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Introduction

The work environment contains a variety of health hazards, some very dangerous, and most adults spend a large proportion of their day in this setting. Consequently, each day in the U.S., people are injured or killed at the workplace. For year 2008, Bureau of Labor Statistics reported 5,214 work-related fatalities. Work-related injury and illness can result in disability, lost wages and sometimes change in quality of life for the worker and their family. It also negatively impacts employer productivity and costs.

In North Carolina, while rates of work-related injuries and illnesses have significantly decreased over the past two decades, workers are still being hurt or killed. These incidents are preventable. Tracking work-related injuries and illnesses is the first step in the process of prevention. Tracking, or surveillance, provides information on the frequency of injuries and illnesses, the most affected occupational groups, and other related risk factors. Findings can then be used by the Division of Public Health in conjunction with groups like employers, labor unions, health and safety professionals, and community-based organizations to develop and disseminate feasible and effective interventions that can prevent workplace injury and death.

The Council of State and Territorial Epidemiologists (CSTE) has developed a set of measures to track work-related occupational injuries and illnesses called the *Occupational Health Indicators* (OHIs). This report has compiled a small subset of these indicators to provide an overview and basic trend information describing the occupational health status of workers in N.C. The time period covered is 2003 - 2008. Measures of frequency (rates) use the methods documented in CSTE's publication "Occupational Health Indicators: A Guide for Tracking Work-Related Health Effects and Their Determinants" located at:

http://www.cste.org/dnn/Portals/0/OHIndicatordocument1208.pdf .

For some indicators, other data elements were evaluated (e.g. industry, occupation, exposure event, and other worker characteristics) to help describe factors which contribute to occupational injury. The indicators are generated from several data sources and each source has its strengths and limitations. Information on data sources can be found in the Data Sources section of this report and in the OHI technical document as above.

This report was prepared by the Occupational Surveillance Unit (OSU), Occupational and Environmental Epidemiology Branch, NC Division of Public Health. The purpose of the OSU is to: describe occupational risks to health; investigate conditions that result in increased morbidity and mortality through targeted surveillance programs; and promote safer work environments. Ongoing surveillance programs include: the NIOSH State-Based Occupational Health and Safety Surveillance Program (Occupational Health Indicators), the NIOSH Adult Blood Lead Epidemiology and Surveillance Program (ABLES), and the NIOSH-SENSOR Pesticide Injury and Illness Surveillance Program.

Employment Demographics Profile

According to 2008 U.S. Census data there are approximately 4,258,000 people employed in North Carolina. North Carolina ranks as the 10th largest state in the country and has experienced a population growth rate of 9.7% in the last five years. A major reason for the state's population growth is an increase in people migrating into North Carolina from other regions in the U.S. or foreign countries. The state's labor force is growing faster than the national average and is transitioning from traditional labor-intensive industries to knowledge-based or service-related industries.

Composition of the N.C. workforce by sex and race has remained relatively unchanged for the time period of the report (Table 1). In 2008 Hispanics accounted for 6.3% of the working population; down from 7.1% in 2003 and a peak in 2006 of 8.3 %. Currently the number of N.C. citizens at retirement age is growing quickly and North Carolina ranks tenth among states in number of persons age 65 and older. Many are choosing to stay in the workforce. In 2008, seniors accounted for 4.7 % of the N.C. workforce, up from 1.4 % in 2003. The number of persons employed in N.C. age 65 and above has increased by 35% for the period of 2003 - 2008 and is the state's fastest growing sector compared to those age 16 -17 (10% increase) and 18 - 64 (10% increase).

Table 1

NC Workforce 2008; Demographic Profile	
	%
Male	52.7
Female	47.3
Age (years)	
16 - 17	1.4
18 - 64	93.9
65+	4.7
Race/ethnicity	
White	75.3
Black	19.9
Other	4.9
Hispanic	6.3

Source: BLS Current Population Survey

The five industries with highest percentages of employment in North Carolina in 2008 are shown in Table 2. These five industries represent 67.6% of the total employment for the state. Overall, private industry accounts for 83% of employment whereas the public sector (state and local government) comprises 15% of total average annual employment.

Table 2

Percent Distribution of Employed Persons by Industry, 2008		
Rank		%
1	Education and Health Services	23.2
2	Wholesale and Retail Trade	14.1
3	Manufacturing	11.7
4	Leisure and Hospitality	9.3
5	Professional and Business Services	9.3

Source: BLS Current Population Survey

The five largest occupational groups in North Carolina in 2008 are shown in Table 3. These five occupational groups represent 75.2% of all employed persons in the state.

Table 3

Percent Distribution of Employed Persons by Occupation, 2008		
Rank		%
1	Professional and Related	21.1
2	Service	16.8
3	Management, Business and Financial Operations	14.4
4	Office and Administrative Support	11.9
5	Sales and Related	11.0

Source: BLS Current Populations Survey

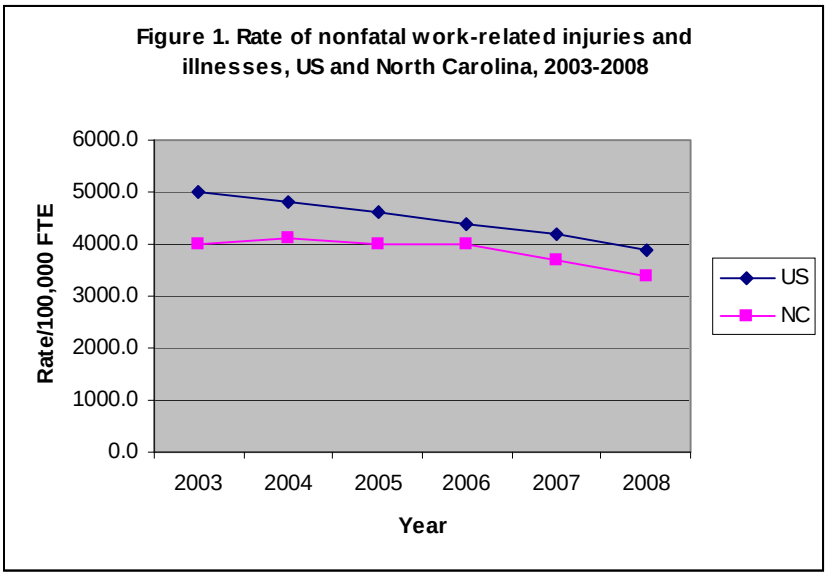
Indicators

1. Nonfatal Work-Related Injuries and Illnesses Reported by Employers

The U.S. Bureau of Labor Statistics (BLS) collects information on occupational injuries and illnesses using the annual Survey of Occupational Injury and Illnesses (SOII). This survey estimates nonfatal occupational injury and illness rates by state from a survey sample of private and public employer establishments. The limitations of this annual survey include under-reporting due to exclusion of certain groups (self employed, private households, federal government employees and farmers employing fewer than 11 employees) and possible sampling error as the SOII is based on a sample. Data provided for this indicator focuses primarily on private industry.

Analyses of overall workplace injury and illness trends:

- During 2003-2008, reported rates of occupational injury and illness in North Carolina decreased from 4,000 to 3,400 per 100,000 full time equivalent (FTE*) workers; representing a 15% decrease (Figure 1). North Carolina rates have consistently remained lower than the overall national trend.



Source: BLS Survey of Occupational Injury and Illness

* Full time equivalent worker = 40 hours per week/50 weeks per year

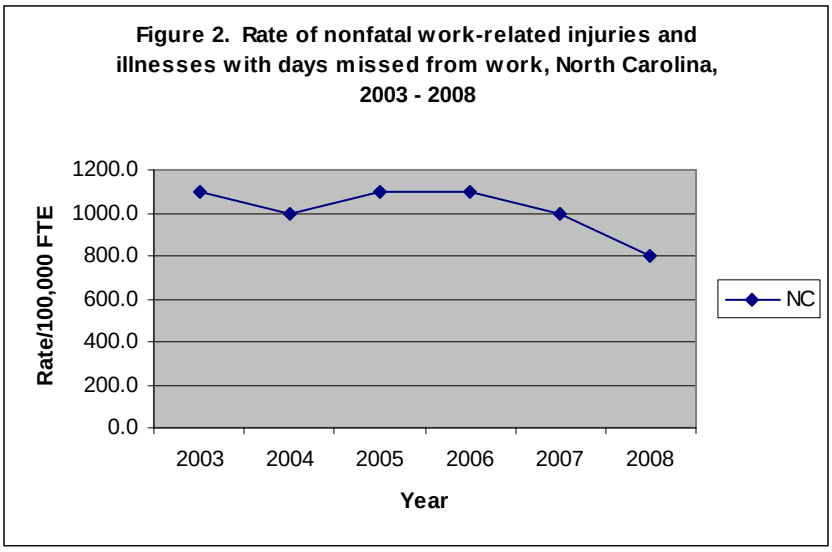
- Industry divisions with the highest annual incidence rates for this time period included: Agriculture, Forestry, Fishing, and Hunting, followed by Transportation & Warehousing, and then Arts, Entertainment and Recreation (ranked based on frequency).

- Each year the combined incidence rate of injury and illness for the public sector (state and local government) was high in comparison to the combined rate for N.C.'s private sector. This mirrors the national trend.

- During 2003 - 2007 the incidence rate for the industry division, Health Care and Social Assistance (public sector), was very high when compared to all other industry divisions, public and private sectors combined. This finding mirrors the national trend where Education and Health Services (containing the sub-sector Healthcare and Social Assistance) is one of six public industry sectors where incidence rates are high and typically exceed those of private industry.

Analyses of cases involving days missed from work:

- During 2003 - 2008, rates of occupational injury and illness for cases with days missed from work decreased from 1,100 to 800 per 100,000 FTE workers in North Carolina (Figure 2); representing a 27% decrease.



Source: BLS Survey of Occupational Injury and Illness

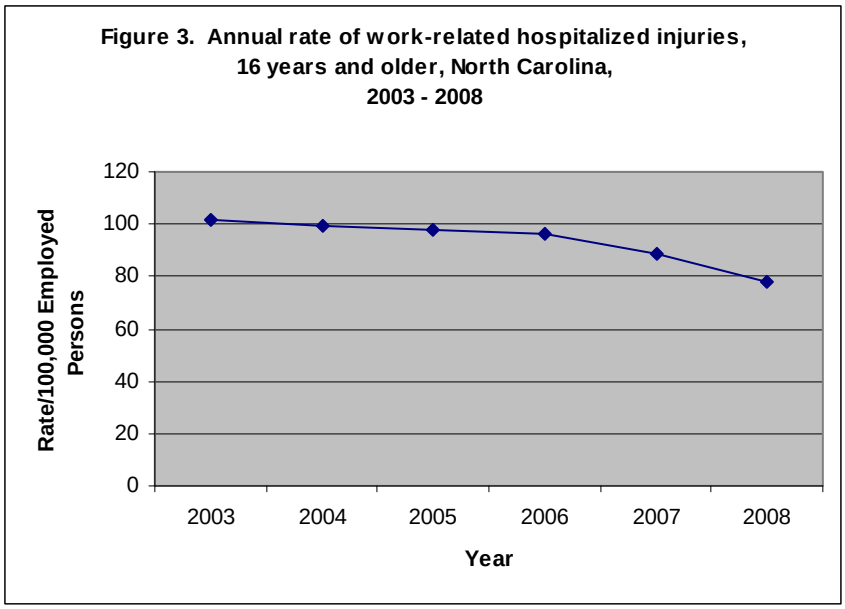
- Workers between the ages of 25 and 54 years of age accounted for 72% of all cases; males accounted for 66% of these cases.
- Transportation & Warehousing had the highest incidence rate each year for cases involving days missed from work.
- Service workers followed by Transportation and Material Moving workers experienced the highest number of injuries and illnesses involving days missed from work.
- The events or exposures most responsible for nonfatal occupational injuries and illnesses with days missed from work were: contact with object/equipment (26%), overexertion (23%), and fall on the same level (16%).

2. Work-Related Hospitalizations

Work-related hospitalizations are identified in the Hospital Discharge dataset by "payer" of hospital charges or insurance type. If hospital charges are billed to Workers' Compensation, then the case is classified as work-related. Benefit coverage of a state's Workers' Compensation Program may influence the proportion of hospitalizations paid for by Workers' Compensation along with utilization of the coverage by workers if eligible.

Analyses of work-related hospitalization trends:

- During 2003 -2008 there was a decrease in hospital discharge rates in which Workers' Compensation was the primary payer from 101 to 78 per 100,000 employed persons (Figure 3); representing a 23% decline.



Source: NC State Center for Health Statistics, 2007 North Carolina Inpatient Hospital Discharge Data and BLS Current Population Survey

Analyses of cases involving work-related hospitalization:

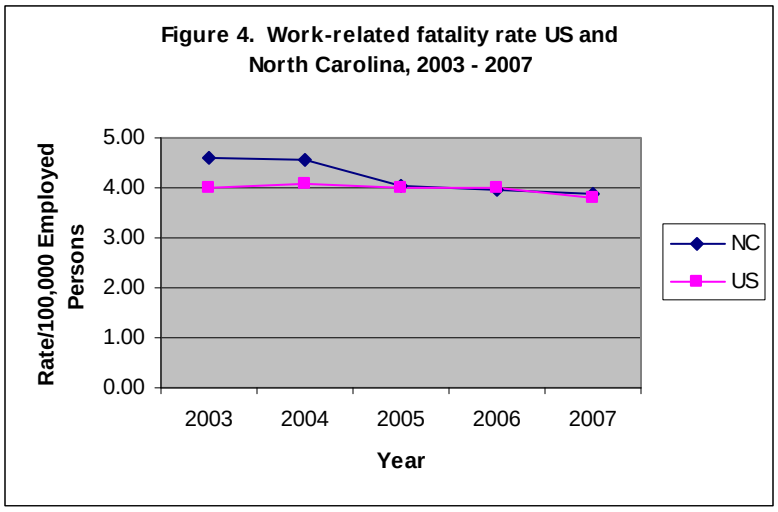
- Workers between the ages of 35 -54 years of age accounted for 54% of all work-related hospitalizations; males accounted for 74% of these cases.
- Hospital discharge data does not include industry and occupation coding.
- Intervertebral disk disorders (damage to cushions in between the bones of the spine) accounted for the largest proportion of work-related hospital discharges (17%).

3. Fatal Work-Related Injuries

Data to track fatalities comes from the Census of Fatal Occupational Injuries (CFOI) administered by the Bureau of Labor Statistics. CFOI compiles a count of all fatal work-related injuries occurring in the U.S. per year. The program uses diverse state, federal, and independent data sources to identify, verify, and describe fatal work injuries. This assures counts are as complete and accurate as possible.

Analyses of fatal work-related injury trends:

- During 2003 - 2007* there was a decrease in the rates of fatal work-related injuries in North Carolina from 4.60 to 3.76 per 100,000 employed persons (Figure 4); representing an 18% decline.
- In 2003, North Carolina's rates were in excess of the national average and have been equal to the national average since 2005.
- During 2003 - 2008 ** fatality counts ranged from 182 -160 per year with an average of 171 fatal work injuries per year.



Source: BLS Census of Fatal Occupational Injuries and BLS Current Population Survey

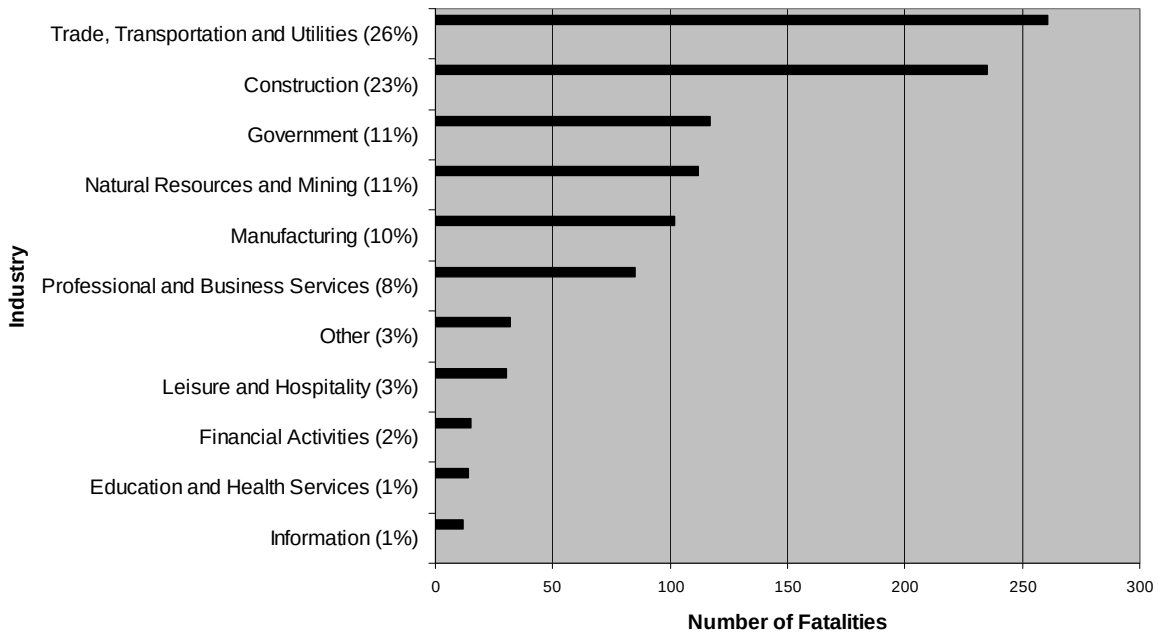
* Rates for 2008 are not included because the method for calculating the denominator was changed by BLS in 2008 and comparisons with previous years are not recommended.

** 2008 data was preliminary data.

Analyses of cases involving fatal work-related injury:

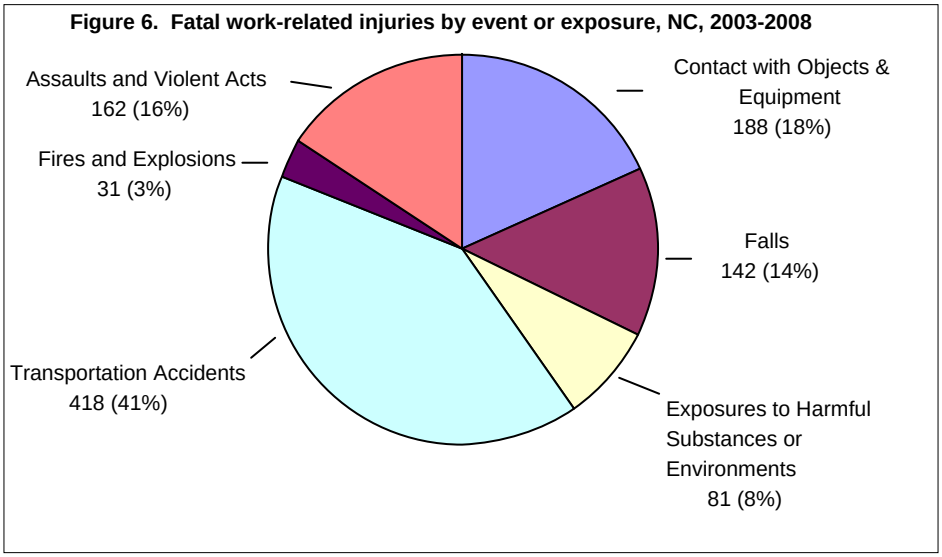
- During 2003-2008, workers between 25 - 54 years accounted for 66% of all fatalities; the majority of work-related fatalities occurred among men (952 cases or 93% of all cases).
- The highest number of fatalities occurred in the Trade, Transportation & Utilities industry followed by Construction (Figure 5). From 2003 to 2008, the Manufacturing division experienced the greatest percent decrease in fatalities followed by Construction, 46% and 25%, respectively. Government had the greatest percent increase, 56%. The average annual percent change in fatalities was -10% for Manufacturing, - 3% for Construction, and +13% for Government.
- Occupations with the highest number of fatalities each year included: Natural Resources, Construction and Maintenance followed by Production, Transportation, and Material Moving (ranked based on frequency).
- Transportation accidents were the events most responsible for fatalities (Figure 6); highway incidents accounted for a large proportion of these incidents.

Figure 5. Work-related fatalities by industry, North Carollina, 2003-2008



Source: BLS Census of Fatal Occupational Injuries

Figure 6. Fatal work-related injuries by event or exposure, NC, 2003-2008



Source: BLS Census of Fatal Occupational Injuries

4. Percentage of Workers Employed in Industries with High Risk for Occupational Morbidity

Table 4 displays the list of designated high risk morbidity industries as determined by CSTE (2003). The proportion of workers employed in these industries in 2007 represents 8% of the working population (data from other states were not available for comparison).

Table 4. Percentage of Workers Employed in Industries with High Risk for Occupational Morbidity

NAICS Code	Code Description	Number Employed	%
623	Nursing and Residential Care Facilities	108,004	37.9%
31161	Animal Slaughtering and Processing	33,298	11.7%
321	Wood Product Manufacturing	28,204	9.9%
4811	Scheduled Air Transportation	17,500	6.1%
49311	General Warehousing and Storage	16,992	6.0%
492	Couriers and Messengers	14,493	5.1%
312	Beverage and Tobacco Product Manufacturing	12,659	4.4%
3361	Motor Vehicle Manufacturing	7,500	2.6%
33661	Ship and Boat Building	7,500	2.6%
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	5,306	1.9%
33635	Motor Vehicle Transmission and Power Train Parts Manufacturing	5,157	1.8%
33231	Plate Work and Fabricated Structural Product Manufacturing	5,129	1.8%
7131	Amusement Parks and Arcades	2,938	1.0%
23813	Framing Contractors	2,856	1.0%
33261	Spring and Wire Product Manufacturing	2,224	0.8%
311821	Cookie and Cracker Manufacturing	1,750	0.6%
4851	Urban Transit Systems	1,750	0.6%
3315	Foundries	1,501	0.5%
32739	Other Concrete Product Manufacturing	1,420	0.5%
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	1,190	0.4%
332998	Enameled Iron and Metal Sanitary Ware Manufacturing	1,138	0.4%
332323	Ornamental and Architectural Metal Work Manufacturing	1,130	0.4%
311511	Fluid Milk Manufacturing	1,015	0.4%
327213	Glass container Manufacturing	750	0.3%
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturi	750	0.3%
322299	All Other Converted Paper Product Manufacturing	676	0.2%
3312	Steel Product Manufacturing from Purchased Steel	668	0.2%
327331	Concrete Block and Brick Manufacturing	612	0.2%
332919	Other Metal Valve and Pipe Fitting Manufacturing	438	0.2%
333412	Industrial and Commercial Fan and Blower Manufacturing	302	0.1%
33637	Motor Vehicle Metal Stamping	298	0.1%
332211	Cutlery and Flatware (except Precious) Manufacturing	61	0.0%
33621	Motor Vehicle Body and Trailer Manufacturing	58	0.0%
31131	Sugar manufacturing	0	0.0%
311512	Creamery butter manufacturing	0	0.0%
316211	Rubber and plastic footwear manufacturing	0	0.0%
333312	Commercial laudry, dry cleaning, and pressing machine man	0	0.0%
	Total	**285,267**	**100.0%**

Source: U.S. Census Bureau County Business Patterns, 2007

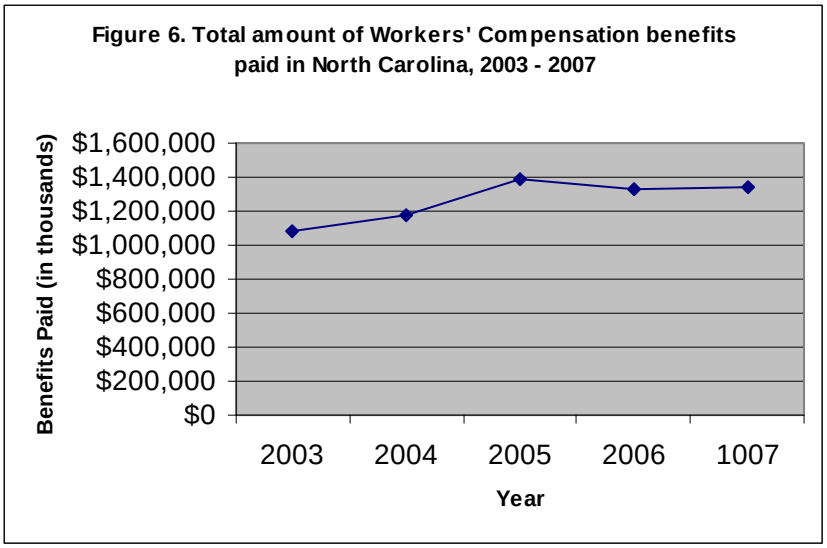
Economic Costs of Work-Related Injuries and illnesses

The best indicator we have of the economic costs of illnesses and injuries comes from information on Workers' Compensation. This program provides guaranteed compensation for workers with work-related injuries or illnesses while limiting the liability exposure of employers. Workers' Compensation provides benefits to partially replace lost wages and pay for medical expenses. In case of a death, the workers' dependents are eligible for survivor benefits.

In North Carolina all businesses employing three or more employees on a regular basis must provide Workers' Compensation Coverage; agricultural employers with fewer than 10 regular employees, certain sawmill and logging operations and all domestic employers are exempt. In 2007, approximately 39% of hired workers on farms did not meet coverage criteria for Workers' Compensation benefits (in 2007 there were 29,933 hired workers on N.C. farms with less than 10 workers and 47,467 hired workers on farms with 10 workers or more).

Analysis of Worker's Compensation trends:

- During 2003 - 2007, there was an overall 23% increase in costs. Since 2005, costs have stabilized (Figure 7). 2008 data were not available.



Source: National Academy of Social Insurance, Workers Compensation, Benefits, Coverage, and Cost, 2007

Conclusions:

The information presented in this report provides an overview of the occupational health status of workers in North Carolina from 2003 to 2008. Data sources used in this report suggest an overall decrease in incidence rates for nonfatal work-related injuries and illnesses; and North Carolina remains below the national average. Fatality incidence rates have demonstrated a modest decline over this same time period; and North Carolina is consistent with national average. Severity of injuries and illnesses appears to be declining as well. We cannot definitively answer the question as to why occupational injury and illness rates are decreasing in the state. Optimistically, strong regulatory programs and improvements in workplace safety by employers and workers may explain these trends. Employment patterns towards less hazardous work and more recently, economic factors (hours worked), may also provide explanation for the decrease.

Despite declining incidence rates there is still work to do. Certain industry divisions are experiencing high incidence rates of nonfatal injuries and illnesses. These include: Agriculture, Forestry, Fishing, and Hunting; Transportation and Warehousing; Construction; and, Health Care and Social Assistance especially in the Public sector. Most fatalities are occurring in the industry division: Trade, Transportation, and

Utilities. More in-depth analysis should be performed to better describe at-risk industry subgroups, worker subgroups, and other factors contributing to injuries and illnesses. Extra effort may be required to look at the agricultural industry. North Carolina is a prominent agricultural state yet illness and injury cases may not be effectively captured using the current data sources. Other sources need to be utilized to better assess the magnitude and risk factors of agriculture-related injuries and illnesses. Lastly, an emerging issue that bears watching is an aging workforce. This trend presents both benefits and challenges to employers in our state for some time to come. Resources to further describe and respond to work-related injuries and illnesses will be available through a five year CDC-NIOSH grant recently awarded to OEEB entitled *State-Based Occupational Health and Safety Surveillance* which began July 1, 2010. The ultimate goal of the grant is to link surveillance findings with outreach activities and policy changes designed to prevent occupational injuries and illnesses.

Data Sources

Employment Demographics Profile

1. N.C. Department of Commerce (2009). *2009 NC Economic Index.* http://www.nccommerce.com

2. Bureau of Labor Statistics (BLS). BLS Geographic Profiles of Employment and Unemployment; Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, 2008 annual averages. http://www.bls.gov/gps/#tables

3. US Administration on Aging (2009). Population for States by Age Group-Rank based on number: July 1, 2008; http://www.aoa.gov/AoARoot/Aging_Statistics/Census_Population/Population/2008/index.aspx

4. Percentage of civilian employment by age group. http://dataferrett.census.gov

5. NC Employment Securities Commission. Insured Employment in North Carolina for Aggregate of all Types by Sector (2 digit) for 2008. http://eslmi23.esc.state.nc.us/ew/EWResults.asp

6. Bureau of Labor Statistics (BLS). Geographic Profile of Employment and Unemployment; Table 20, Percent distribution of employed persons by industry, 2008. http://www.bls.gov/gps/home.htm

7. Bureau of Labor Statistics (BLS). Geographic Profile of Employment and Unemployment; Table 18, Percent distribution of employed persons by occupation, 2008. http://www.bls.gov/gps/home.htm

Non-fatal Work Related Injuries and Illnesses Reported by Employers

1. Bureau of Labor Statistics (BLS). Survey of Occupational Injury and Illness. Table 6. Incidence Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Types. http://www.bls.gov/iif/oshstate.htm#NC .

2. Bureau of Labor Statistics (BLS). 2008 State and Local Government; Nonfatal Occupational Injuries and Illnesses; Case and Demographics. http://www.bls.gov/iif/oshwc/osh/case/osch0041.pdf

3. Bureau of Labor Statistics (BLS). OS NR 10/29/2009 News Release: Workplace injuries and illnesses –2008. http://www.bls.gov/new s.release/osh.nr0.htm

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Work Related Hospitalizations

1. North Carolina State Center for Health Statistics 2007 North Carolina Inpatient Hospital Discharge Data.

2. Bureau of Labor Statistics (BLS). BLS Geographic Profiles of Employment and Unemployment; Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, annual averages. http://www.bls.gov/gps/#tables

Fatal Work-Related Injuries

1. Bureau of Labor Statistics (BLS). Fatal Occupational Injuries in North Carolina. http://www.bls.gov/iif/oshwc/cfoi/tgs/2008/iiffi37.htm

2. Bureau of Labor Statistics (BLS). BLS Geographic Profiles of Employment and Unemployment; Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, annual averages. http://www.bls.gov/gps/#tables

Percentage of Workers Employed in Industries with High Risk for Occupational Morbidity

1. U.S. Census Bureau. 2007 County Business Patterns (NAICS). http://censtats.census.gov/cbpnaic/cbpnaic.shtml

Economic Costs of Injuries and illnesses

1. 2007 Census of Agriculture @ http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_007_007.pdf

2. National Academy of Social Insurance, (2009) Workers compensation; benefits, coverage and cost, 2007. http://www.nasi.org/sites/default/files/research/Workers_Comp_Report_2007.pdf