

**Third Safety Research Symposium  
Strategic Highway Research Program 2  
(SHRP2)  
Transportation Research Board  
July 17, 2008**

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**Acting Director**

**National Institute for Occupational Safety  
and Health**

# Overview of NIOSH

# Every Day in the USA...

## ➤ *146 million U.S. workers enter their workplaces*

- 9,000 are treated in an emergency department for work-related injury or illness; 200 are hospitalized
- 5986 sustain lost-time injuries or illnesses
- 664 develop work-related diseases
- 134 die from work-related diseases
- 16 die from injuries at work

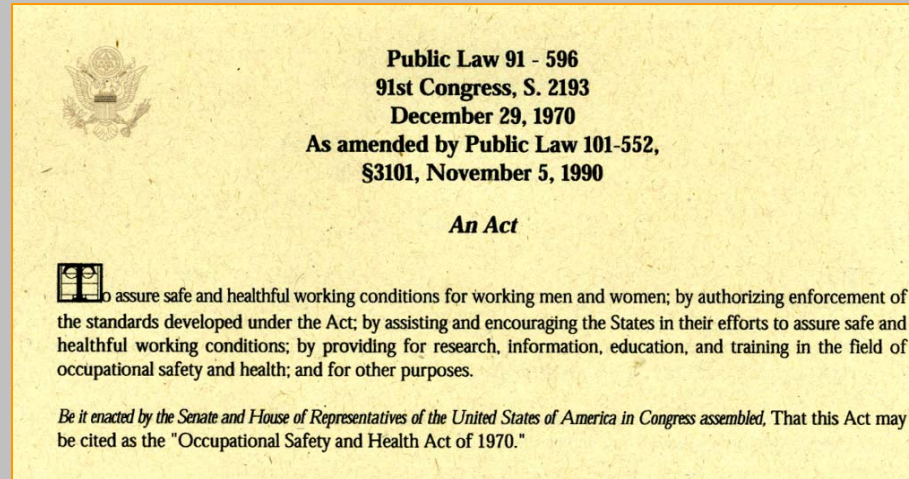
*Employer's workers' compensation costs totaled \$87B in 2004.*



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# Occupational Safety and Health Act of 1970



- PL 91-596 (1970) created OSHA and NIOSH
- *To assure safe and healthful working conditions for working men and women*



## NIOSH Mission

- To generate new knowledge about workplace safety and health and transfer that knowledge into practice globally



# Organizational Chart of Federal Entities for Occupational Safety and Health

## Regulation and Enforcement:

Department of Labor (DOL)

- ↳ Mine Safety and Health Administration (MSHA)
- ↳ Occupational Safety and Health Administration (OSHA)

## Research and Prevention Recommendations:

Department of Health and Human Services (HHS)

- ↳ Centers for Disease Control and Prevention (CDC)
  - ↳ National Institute for Occupational Safety and Health (NIOSH)

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The National Institute for Occupational Safety and Health is the sole federal government organization charged with conducting occupational safety and health research

# Road Safety in the Workplace

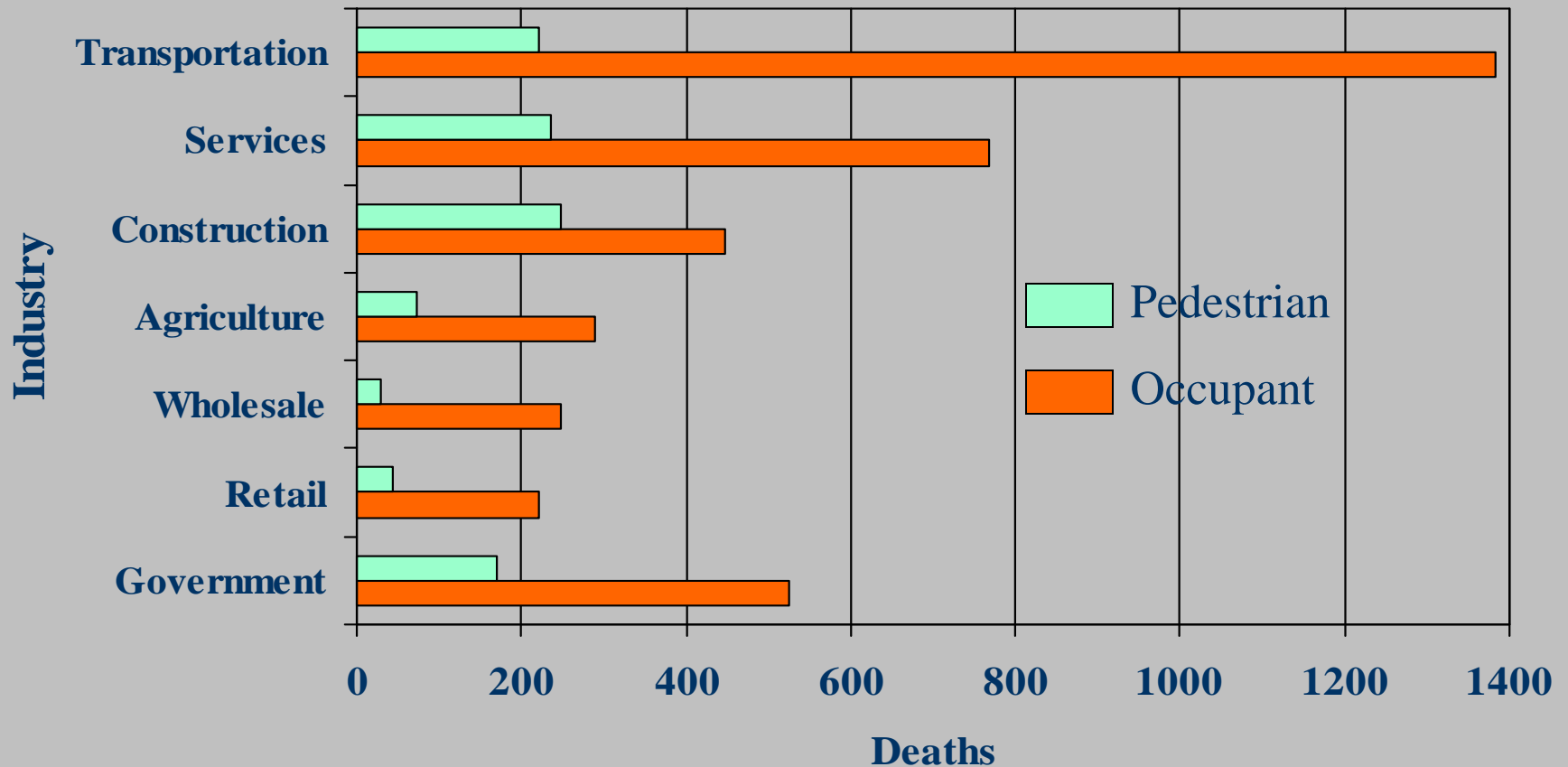


**National Institute for Occupational Safety and Health**  
**Centers for Disease Control and Prevention**

# Fatal Crashes at Work: U.S. Statistics

- ◆ **Vehicle crashes on public highways are the leading cause of occupational fatalities**
  - 1400 deaths each year, 25% of total
  - 80% are vehicle occupants
  - 40% truck drivers
- ◆ **#1 or #2 cause of death in every major industry division**
- ◆ **Workplace crashes affect the public**

## Work-related motor vehicle deaths for selected industry divisions,\* U.S., 2003-2005



\*Private industry (government shown separately)

Source: U.S. Department of Labor, Census of Fatal Occupational Injuries

# How Do Crashes Affect Businesses?

## Financial burden:\*

- Per crash \$ 16,471
- Per fatality: \$504,408
- Per nonfatal injury: \$ 73,750

Note: Covers on- and off-the-job crashes involving employees and dependents

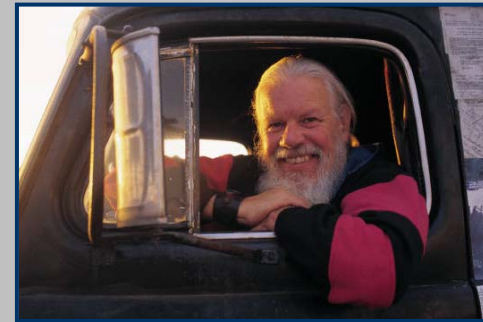
\*Source: NHTSA [2003]. The economic burden of traffic crashes on employers. Publication DOT HS 809 682.

# The Business Case for Road Safety Programs at Work

- ◆ Recognize that road safety is part of worker protection responsibilities
- ◆ Assignment of responsibility for road safety to a senior manager
- ◆ Arguments that make the business case for road safety programs:
  - Act as a good corporate citizen, benefiting workers and the public
  - Managed risk = lower costs

# Occupational Drivers in the U.S.

- ◆ Drivers of commercial motor vehicles (large trucks and buses) – **regulated**
- ◆ Drivers of company-owned vehicles (smaller trucks and passenger vehicles) – **not regulated**
- ◆ Drivers of personal vehicles for work – **not regulated**



# Occupational Road Safety Climate in the U.S.

- ◆ **Comprehensive government safety regulations for large trucks and buses**
- ◆ **NAFTA: cross-border safety and security**
- ◆ **Other employee drivers are not covered by regulations:**
  - **“Best practices” standard (ANSI Z-15, *Safe Practices for Motor Vehicle Operations*)**

# NIOSH Research Projects: Trucking

## ◆ Mortality study of independent owner-operator truck drivers (2004-2008)

## ◆ Research grants:

- Screening for sleep apnea
- Large truck ingress, egress
- Health, injury, and musculoskeletal diseases



# Survey of Truck Driver Anthropometry and Work Space



# NIOSH Anthropometric Survey of U.S. Truck Drivers

## A Two-Stage Plan for Data Collection:

### Stage I:

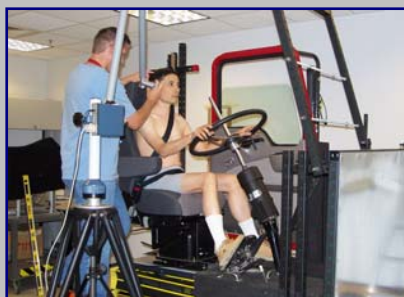
- A stratified sample of 2,000 subjects
- Four data collection regions of the U.S: Pacific West, North Central/Great Lakes, North East, and South
- Data Type: Traditional anthropometry

### Stage II:

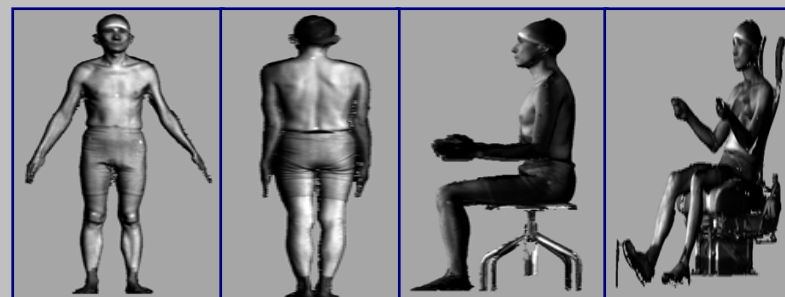
- 300 subjects sample selected based on body types statistically obtained from the pool of 2,000 subjects
- Data Types: 1) Traditional Anthropometry; 2) Workspace Data; 3) Whole Body Scans



Traditional anthropometry



Workspace data



Whole body scans

# Other Studies of Worker Behavior in Road Safety



# Biomechanical Evaluation of Scaffolding Tasks

- Field study of construction workers at 12 construction sites
- Risks of overexertion injury associated with erection and dismantling of frame scaffolding
- Video analyses and computer simulations

Source: Hsiao H, Stanevich RL. Intl J Industrial Ergonomics 18 (1996):407-415



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# Video Capture



# Anthropometric Studies

- Risk of falls analyses
  - Gait analysis
  - Trip and slip risks
  - Shoe – floor interactions
  - Carrying items
  - Eye movement when walking



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# Studies using Videotape

- Drowning risk
  - Behavior assessment using camera underwater
  - Water parks
  - Diving wells
  - Distinct difference in behavior between swimmers and non-swimmers



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NIOSH Topic: Motor Vehicles | CDC/NIOSH

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**CDC** **NIOSH** National Institute for Occupational Safety and Health

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**NIOSH Safety and Health Topic:**  
**Motor Vehicle Safety**

Featured Items - Motor Vehicle Safety

**NEW! Global Road Safety Week 2007**  
 External link: <http://www.who.int/roadsafety/week/en/>  
 April 23-29, 2007 marked the first United Nations Global Road Safety Week. According to a 2005 report from the World Health Organization, road traffic injuries will be the eighth leading contributor to the global burden of disease by the year 2030. Government agencies, non-governmental organizations, academic institutions, and the private sector are working together to communicate the problem, collaborate internationally, and share best practices. Global Road Safety Week activities served to raise awareness around the globe about road traffic injuries. In Geneva, Switzerland, observance of Global Road Safety Week featured a World Youth Assembly emphasizing teen drivers and a UN Stakeholders' Forum at which NIOSH was represented.

Promotion of occupational road safety is an important element of international efforts to combat road traffic injuries. Unlike other work environments, the roadway is an open setting where external forces affect the safety of the occupational driver, and the presence of the worker can, in turn, influence the safety of the public. In U.S. and other high-income nations, the conflict between work vehicles and the public often takes the form of a collision involving a truck and a passenger vehicle. In the developing world, work vehicles likely contribute to the toll of pedestrian fatalities.

World Health Organization Toolkit for materials relating to [Global Road Safety Week](#)  
 External link: <http://www.who.int/roadsafety/week/en/>

**NEW! Worldwide Occupational Road Safety (WORS) Review Project**  
 In developing this report, NIOSH contractor Dr. Will Murray reviewed data sources for occupational crashes using key informants in 15 nations. He found gaps in jurisdiction, incomplete data, and inability to compare or link data within or between nations. These factors, along with limited information sharing about successful programs to promote occupational road safety, are impediments to development of international initiatives.

**NEW! Proceedings of Truck Driver Occupational Safety and Health Conference**  
 NIOSH Publication # 2007-142

**Motor Vehicle Safety**



**Topic Index:**

- ▶ Motor Vehicles

**Motor Vehicle Fatality Investigation Reports**

- [In-house Reports](#)
- [State-based Reports](#)

**On this page...**

- [Featured Items - Motor Vehicle Safety](#)
- [Motor Vehicle-Related Incidents](#)
- [General Info - Crash Statistics & Prevention Strategies](#)
- [Vehicle Safety for Fire Fighters and Emergency Responders](#)

# NIOSH Web page on motor vehicle safety

[www.cdc.gov/niosh/topics/motorvehicle/](http://www.cdc.gov/niosh/topics/motorvehicle/)

**For more information...**



**Stephanie Pratt  
Coordinator**

**Transportation, Warehousing,  
and Utilities Program**

**Centers for Disease Control and  
Prevention/National Institute for  
Occupational Safety and Health**

**304-285-5992 or [sgp2@cdc.gov](mailto:sgp2@cdc.gov)**



# Survey Aims

- **This survey project is to establish an anthropometric and workspace database of 2300 truck drivers in the continental United States**
- **Database will be used by NIOSH partners to design next generation truck cabs with sound ergonomic designs**
- **Will be used to upgrade and develop industry consensus standards on truck cab design**
- **Ergonomic cabs will help increase truck driver visibility, comfort, seat belt use and post-crash survivability, thus reducing their exposure to fatal and non-fatal injuries.**



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