

## **Appendix 4: Traumatic Injury Databases and Information Systems**

**Name of Surveillance System or Dataset:** Alaska Occupational Injury Surveillance System (AOISS)

**Owner/Manager/Contact:** Jan C. Manwaring

### **Description/Scope:**

Surveillance of occupational fatalities in Alaska is maintained and monitored by the Alaska Field Station in the Alaska Occupational Injury Surveillance System (AOISS) database. AFS staff collect information from over a dozen local, state and federal sources, including the US Coast Guard, the National Transportation Safety Board, Federal Aviation Administration, and the State of Alaska's Section of Community Health & EMS Occupational Injury Prevention Program. The database houses detailed information and serves as the backbone of our research.

### **Major Analyses Undertaken:**

Analysis of AOISS focuses research and intervention efforts on hazardous employment sectors such as commercial fishing and air transportation. AFS researchers have produced over 20 peer-reviewed papers using AOISS data which identify risk factors, and possible solutions to Alaska's high rate of occupational fatalities. The partnerships that AFS staff have developed with other federal agencies, Alaska state agencies, non-governmental organizations and industry are a critical part of our ability to maintain the AOISS database.

### **Outputs (descriptive report, article, methodology, etc.):**

Fiscal Year 1996 to 2005 Publications AOISS Related

1. Conway GA, Hill A, Martin S, Mode NA, Berman MD, Bensyl DM, Manwaring JC, Moran KA [2004]. Alaska air carrier operator and pilot safety practices and attitudes: a statewide survey. *Aviat Space Environ Med* 75(11):984-991.
2. Conway GA, Mode NA, Berman MD, Martin S, Hill A [2005]. Flight safety in Alaska: Comparing attitudes and practices of high and low-risk air carriers, *Aviat Space Environ Med* 76(1):52-57.
3. Conway G, Martin S, Berman M, Hill A, Bensyl D, Manwaring J, Moran K [2004]. Risk factors for air transportation safety among air carrier operators and pilots in Alaska: A major survey and case-control analysis [Abstract] In: *The 7th World Conference on Injury Prevention and Safety Promotion, Vienna, Austria, June 6th-9th 2004*. Vienna, Austria, Vienna Austria: Kuratorium fur Schutz und Sicherheit/Institut Sicher Leben, NN: 20025703.
4. Conway G, Moran K [2004]. Scientific worker and licensed professional deaths in Alaska, 1990-2002 [Abstract] In: *The 7th World Conference on Injury Prevention and Safety Promotion, Vienna, Austria, June 6th-9th 2004*. Vienna, Austria, Vienna, Austria: Kuratorium fur Schutz und Sicherheit/Institut Sicher Leben, NN: 20025707.

5. Hudson D, Hunt A, Conway G, Ekman R [2004]. Cold-related injuries in Alaska, 1991-1999 [Abstract] In: The 7th World Conference on Injury Prevention and Safety Promotion, Vienna, Austria, June 6th-9th 2004. Vienna, Austria, Vienna Austria: Kuratorium fur Schutz und Sicherheit/Institut Sicher Leben, NN: 20025706.
6. Conway GA, Manwaring J [2003]. Surveys of Alaska's Aviation Industry [Abstract] In: National Occupational Injury Research Symposium 2003, October 28-30, 2003, Pittsburgh, PA: <http://www.cdc.gov/niosh/noirs/noirsmain.html>.
7. Husberg BJ, Lincoln JM [2003]. Making Alaska's Fishing Industry Safer: applied Epidemiology and Engineering [Abstract] In: National Occupational Injury Research Symposium 2003, October 28-30, 2003, Pittsburgh, PA: <http://www.cdc.gov/niosh/noirs/noirsmain.html>.
8. Manwaring J, Conway GA, Moran K [2003]. Progress in Partnerships for Surveillance and Prevention of Occupational Aircraft Crashes in Alaska 1990-1999 [Abstract] In: National Occupational Injury Research Symposium 2003, October 28-30, 2003, Pittsburgh, PA: <http://www.cdc.gov/niosh/noirs/noirsmain.html>.
9. Moran KA, Conway GA, Bensyl D [2003]. Human Errors as a Leading Cause of Occupant Mortality in Air Taxi and Commuter Crashes in Alaska 1990-1999 [Abstract] In: National Occupational Injury Research Symposium 2003, October 28-30, 2003, Pittsburgh, PA: <http://www.cdc.gov/niosh/noirs/noirsmain.html>.
10. CDC [2002]. Factors Associated with Pilot Fatalities in Work-Related Aircraft Crashes - Alaska 1990-1999, MMWR 50(11):347-349.
11. Conway GA, Lincoln JM, Hudson DS, Bensyl DM, Husberg BJ, Manwaring JC [2002]. Surveillance and Prevention of Occupational Injuries in Alaska: A Decade of Progress 1990-1999, Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2002-115.
12. Thomas TK, Bensyl DM, Manwaring JC, Conway GA [2000]. Controlled flight into terrain accidents in commuter and air taxi operators in Alaska. *Aviation, Space and Environmental Medicine* 71(11):1098-1103.
13. Conway GA, Lincoln JM, Husberg BJ, Manwaring JC, Klatt ML, Thomas TK [1999]. Alaska's model program for surveillance and prevention of occupational injury deaths, *Public Health Reports* 114(6):550-558.
14. Lincoln JM, Conway GA [1999]. Preventing commercial fishing deaths in Alaska. *Occup Environ Med* 56(10):691-695.
15. Conway GA, Klatt ML, Manwaring JC [1998]. Effective injury prevention using surveillance data: Helicopter logging, Alaska, 1992-1995. *Proceedings of the Tenth International Congress on Circumpolar Health, Anchorage, AK, September, 1998.*
16. Conway GA, Lincoln JM, Jorgensen , Klatt ML, Manwaring JC [1998]. Preventing drownings in Alaska's commercial fishing industry. *Proceedings of the Tenth International Congress on Circumpolar Health, Anchorage, AK, September, 1998.*
17. Garrett LC, Conway GA, Manwaring JC [1998]. Epidemiology of work-related aviation fatalities in Alaska, 1990-94. *Aviation, Space and Environmental Medicine* 69(12):1131-1136.
18. Garrett LG, Conway GA [1998]. Aviation: a serious occupational hazard--Alaska, 1990-1995. *Proceedings of the Tenth International Congress on Circumpolar Health, Anchorage, AK, September, 1998.*

19. CDC [1997]. Work-related aviation fatalities, Alaska, 1990-1994. MMWR 46(22):496-498.
20. Bledsoe GL, Klatt MK, Lincoln JM [1996]. Occupational fatalities in Alaska—1995. State of Alaska Epidemiology Bulletin No. 10.
21. Conway GA [1996]. Epidemiology of Alaska Helicopter Logging Deaths, presented at Klatt ML, Hudson D, Conway GA, eds. Proceedings of the Helicopter Logging Safety Workshop, Ketchikan, AK, March 1-2, 1995.
22. Conway GA, Lincoln JM [1996]. Preventing deaths in Alaska's fishing industry (Editorial). Public Health Reports 110(6):700.
23. Manwaring J [1996]. Synthesis of NTSB aircraft accident data involving helicopter external load operations in the United States and Alaska, 1980-1994. Presented at Klatt ML, Hudson D, Conway GA, eds Proceedings of the Helicopter Logging Safety Workshop, Ketchikan, AK, March 1-2, 1995.
24. NIOSH [1996]. Proceedings of the Helicopter Logging Safety Workshop, Ketchikan, AK, March 1-2, 1995, 128 pages

### **Intermediate Outcomes:**

The Alaska Department of Health and Social Services (AK DHSS) and the Alaska Department of Labor and Workforce Development (AK DOLWD) use AOISS data to augment their own databases, and to develop and implement the Alaska Injury Prevention Plan. Research findings from AOISS were also instrumental in providing the basis for developing the following intervention strategies: The Medallion Foundation's Five Star Medallion Program (a voluntary higher safety standard for air carrier companies), FAA's Capstone Program (state-of-the-art navigational avionics equipment for small aircraft), and FAA's Circle of Safety Program (educational program for aircraft passengers to encourage safe flying in Alaska).

### **Outcomes:**

AOISS research has resulted in partnerships that AFS staff have developed with other federal agencies, Alaska state agencies, non-governmental organizations and industry. These partnerships are a critical part in the combined effort to reduce occupational fatalities in Alaska.

Analysis of AOISS data shows that over a sixteen year period (1990-2005), AFS, in partnership with many agencies and individuals, showed significant progress in reducing workplace deaths:

- A 67% decline in all occupational deaths
- A 73% decline in commercial fishing deaths
- A 73% decline in commercial pilot deaths

### **Availability**

Raw data is only available through agreement with NIOSH AFS and the Alaska Department of Health and Social Services.

**Restrictions on Access:**

Access to raw data is restricted to NIOSH AFS and the Alaska Department of Health and Social Services staff who need to know. Requests for aggregate data are reviewed on a case-by-case base.

**Name of Surveillance System or Dataset:** Alaska Trauma Registry (ATR)

**Owner/Manager/Contact:** This data source is produced and maintained by the Alaska Department of Health and Social Services (AK DHSS), Division of Public Health, Section of Injury Surveillance and Prevention. Contact - Martha Moore, 465-8631. PO Box 110616 Juneau, AK 99811-0616. NIOSH provides financial and technical assistance, to the State of Alaska, for the development and use of the ATR for the use in work-related injury surveillance.

**Description/Scope:**

The Alaska Trauma Registry is an information system of the most seriously injured patients in Alaska, and the treatment that they have received. Since 1991, the trauma registry has collected data from all 24 of Alaska's acute care hospitals.

The primary purposes of the registry are to evaluate the quality of trauma patient care and to plan and evaluate injury prevention programs. The criteria for inclusion in the trauma registry are patients with injuries who are admitted to an Alaska hospital, held for observation, transferred to another acute care hospital, or declared dead in the emergency department, and for who contact occurred within 30 days of the injury. Injuries include trauma, poisoning, suffocation, and the effects of reduced temperature.

Trauma Registry data is confidential and protected under Alaska Statute 18.23.010-070. All trauma registry personnel and those requesting trauma registry data are required to sign a confidentiality statement. The trauma registry does not include patient, physician, hospital, clinic, or ambulance service identifiers.

Information from the Trauma Registry is not available online. Requests for information are made to the AK DHSS office and in most instances, provided in summary (aggregate) form. Non-aggregate data may be requested for special research projects through application and in accordance with the Trauma Registry Release of Information Policy.

Trauma registries are a unique source of work-related nonfatal injury data requiring hospitalization: demographics, geographic information, disability, medical cost, payment source, cause of injury, discharge diagnosis, and severity scoring, are only a few of the examples of these data that are collected. Since 1991, all 24 hospitals in Alaska report to the ATR, making it a population-based data source. Analysis of the trend data and identification of hazardous processes have lead to sharing information to foster injury prevention strategies specifically targeted to high-risk areas. NIOSH uses data from ATR to identify hazardous events that lead to the assessment and implementation of injury prevention measures. Current collaboration with NIOSH external partners focus on injury prevention, trend analysis, and increasing worker awareness of safety and injury prevention measures.

**Long-term objectives of this project include using information from the ATR to:**

- Reduce the morbidity resulting from work-related injuries in Alaska by providing data that would allow the development of appropriate prevention strategies.
- Facilitate state, federal, and international work-related injury comparisons that permit trend analysis.
- Improve the awareness of non-fatal work-related injury as a significant health problem.
- Assist in the evaluation of work-related injury-prevention strategies.
- Facilitate research for the prevention of non-fatal work-related injuries.

**Major Analyses Undertaken:**

Findings from ATR work-related cases have been analyzed by NIOSH AFS for trends, root causes, and characteristics of injuries for different jobs, industries, and conditions. This information is shared with federal and state agencies, employers, and injury prevention groups in Alaska where it is used to prioritize and focus injury prevention and training for workers. Following are examples of results and impact for this project.

- U.S. Army Injury Prevention Program Development
  - In initial discussions with the U.S. Army in Alaska on work-related injuries, ATR data was presented (identifying cold weather injuries as one of the leading causes of hospitalized injuries to soldiers in Alaska) and a serious discussion on cold weather injuries followed. The army was interested in developing an internal surveillance system for cold weather related injuries.
- Priorities in Construction Safety in Alaska
  - Data from the ATR has identified the construction industry as having a high number of injuries in Alaska. We have shared information on causes and risk factors identified in our surveillance and have shared this information with other groups.
- Priorities and Injury Prevention in Commercial Fishing
  - Surveillance data from the ATR has identified specific machinery and work processes that have led to nonfatal injuries in the commercial fishing industry. These results were shared with the NIOSH, Injury Prevention in the Commercial Fishing Industry Project, USCG, and other organizations.

**Outputs (*descriptive report, article, methodology, etc.*):**

NIOSH [2006]. Proceedings, Second International Fishing Safety and Health Conference, 2006 Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2006-114.

Husberg BJ, Fosbroke DE, Conway GA, Mode NA [2005]. Hospitalized Nonfatal Injuries in the Alaskan Construction Industry. *Am J Ind Med* (47):428-433.

Mode NA, Hackett EJ, Conway GA [2005]. Unique Occupational Hazards of Alaska: Animal Related Injuries. *Wilderness and Environmental Medicine* (16) 185-191.

NIOSH [2003]. Proceedings of the International Fishing Industry Safety and Health Conference, 2002 Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2003-102.

Conway GA, Lincoln JM, Hudson DS, Bensyl DM, Husberg BJ, Manwaring JC [2002]. Surveillance and Prevention of Occupational Injuries in Alaska: A Decade of Progress 1990-1999, Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2002-115.

Husberg BJ [2002]. Surveillance for Nonfatal Work-Related Injuries in the Alaska Fishing Industry. In: Proceedings of the International Fishing Industry Safety and Health Conference, Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. DHHS (NIOSH) Publication No. 2003-102.

Lincoln JM, Husberg BJ, Conway GA [2002]. Improving Safety in the Alaskan Commercial Fishing Industry. In: Proceedings of the International Fishing Industry Safety and Health Conference, Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2003-102.

Husberg BJ, Lincoln JM, Conway GA [2001]. On-Deck Dangers in the Alaskan Commercial Fishing Industry, Marine Safety Council, U.S. Coast Guard Journal of Safety at Sea Proceedings 58(2): pp. 23-24.

Lincoln JM, Husberg BJ, Conway GA [2001]. Improving Safety in the Alaskan Commercial Fishing Industry. International Journal of Circumpolar Health. Volume 60, pages 705-713.  
Conway GA, Lincoln JM, Husberg BJ, Manwaring JM, Bensyl DM, Choromanski DM [2001]. Alaska's Model Program for Occupational Injury Prevention: Applying Surveillance for Effective Public Health Practice. International Journal of Circumpolar Health. Volume 60, pages 714-726.

Thomas TK, Lincoln JM, Husberg BJ, Conway GA [2001]. Is it Safe on Deck? Fatal and Non-Fatal Workplace Injuries Among Alaskan Commercial Fishermen. Am J of Ind Med. 40:693-702.

Conway GA, Lincoln JM, Husberg BJ, Bensyl DM, Manwaring JM [2001]. Occupational Injury Research and Prevention in Alaska. Arctic Research. 15:14-26.

Conway GA, Lincoln JM, Husberg BJ, Manwaring JC, Klatt ML, Thomas TK [1999]. Alaska's Model Program for Surveillance and Prevention of Occupational Injury Deaths. Public Health Reports. 114:67-73.

Conway GA, Husberg BJ [1999]. Cold Related Non-Fatal Injuries in Alaska. *American Journal of Industrial Medicine*, S1, pages 39-41.

Choromanski D, Husberg BJ [1999]. Occupational Falls Raise Safety Concerns. *State of Alaska Epidemiology Bulletin*. 3(1).

Husberg BJ, Conway GA, Moore MA, Johnson MS [1998]. Surveillance for nonfatal work-related injuries in Alaska, 1991-95. *Am J Ind Med* 34(5):493-498.

### **Intermediate Outcomes:**

- U.S. Army Injury Prevention Program Development
  - The U.S. Army in Alaska is pilot testing a cold weather injury surveillance system using the ATR as a model. Information from the ATR has also been useful to the US Army Center for Health Promotion and Preventive Medicine in developing cold weather injury prevention program and injury prevention materials. (see [http://chppm-www.apgea.army.mil/coldinjury/#\\_CIPP](http://chppm-www.apgea.army.mil/coldinjury/#_CIPP) )
- Priorities in Construction Safety in Alaska
  - The Associated Builders and Contractors, Alaska Chapter, has used ATR information to prioritize topics for safety training among their members.
  - Since 1999, the annual Alaska Governor's Safety and Health Conference has used ATR data to focus speaker selection and topics on priority areas where most injuries occur and can be prevented.
- Priorities and Injury Prevention in Commercial Fishing
  - Safety organizations including the USCG, AMSEA, and NPFVOA now includes information in their safety training and publications that address deck safety and injury prevention.
  - Publication, *Deck Safety for Crab Fishermen*, describing crab deck hazards and conditions and recommendations for specific engineering or administrative controls. (can be found at <http://www.jensenmaritime.com/articles/crabdeck.pdf#search=%22deck%20safety%20for%20crab%22> ) Each recommendation lists the benefit, estimated cost, installation/implication information that in some incases include detailed engineering drawings. Approximately 3,000 of these publications have been distributed in the commercial fishing community over the past three years and many of the recommendations have become commonplace on vessels in Alaska waters.

### **Outcomes:**

An analysis of the long-term outcomes for this dataset is currently in process.

**Availability** (*e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.*):

Raw data through agreement with NIOSH AFS and the Alaska Department of Health and Social Services.



### **Restrictions on Access:**

Access to data is restricted. Requests are made to the CHEMS office and in most instances, provided in summary (aggregate) form. Non-aggregate data may be requested through the state of Alaska for special research projects through application and in accordance with the Trauma Registry Release of Information Policy

([http://www.hss.state.ak.us/dph/chems/injury\\_prevention/Assets/ATR/ems\\_trroi.pdf](http://www.hss.state.ak.us/dph/chems/injury_prevention/Assets/ATR/ems_trroi.pdf) )

### **Applications**

**Name of Surveillance System or Dataset:** Childhood Agricultural Mortality Surveillance (CAMS)

**Owner/Manager/Contact:**

Owner: NIOSH

Manager: John Myers, NIOSH, DSR

Contact: John Myers, NIOSH, DSR

**Description/Scope:**

The Childhood Agricultural Mortality Surveillance (CAMS) is a death certificate-based surveillance system designed to collect information on youth less than 20 years of age who were fatally injured on farms in the U.S. NIOSH collects these data by purchasing death certificates from 50 State Vital Statistics Registrars that meet the following criteria: fatality occurred to a youth less than 20 years of age; the location of the injury event was a farm; and the cause of death was external (ICD-10 Codes V01-Y98). CAMS data are currently available for the years 1995 through 2003.

**Major Analyses Undertaken:**

The 1995-2000 CAMS data have extensively analyzed. Data from these analyses have been released through a conference presentation and a peer-reviewed journal article (see “Outputs” for citation). Analyses of the 2001-2003 CAMS mortality data will be conducted once 2 to 3 years of additional data become available. Additional analyses on suicides among farm youth have been provided to the National Center for Rural and Agricultural Health and Safety (NCCRAHS) to support their rural suicide prevention activities (see “Intermediate Outcomes” for details).

**Outputs** (descriptive report, article, methodology, etc.):

Peer-reviewed Journal Articles:

Goldcamp EM, Hendricks KJ, Myers JR. [2004]. Farm fatalities to youth 1995-2000: a comparison by age groups. *Journal of Safety Research* 35(2):151-157.

Conference papers:

Goldcamp EM, Hendricks KJ, Myers JR. [2002]. Farm fatalities to youth 1995-1997: a comparison by age groups. National Institute for Farm Safety 2002 Annual Meeting, June 23-27, 2002, Ponte Vedra Beach, FL. Columbia, MO: National Institute for Farm Safety.

### **Intermediate Outcomes:**

1. One significant finding from the NIOSH death certificate studies has been the importance of non-work fatalities to youth on farms. These findings led to the development of a new recommendation in the updated 2002 Childhood Agricultural Injury Prevention National Action Plan to address non-work injuries on farms. In response to this new recommendation, the National Children’s Center for Rural and Agricultural Health and Safety (NCCRAHS) produced several documents on the importance and design of safe play areas for children on farms. NCCRAHS also maintains a website dedicated to the topic of safe play areas on farms (see [http://www.marshfieldclinic.org/nfmc/pages/default.aspx?page=nfmc\\_nccrahs\\_safe\\_play\\_welcome](http://www.marshfieldclinic.org/nfmc/pages/default.aspx?page=nfmc_nccrahs_safe_play_welcome)).

2. Based on the 2004 CAMS journal article, NCCRAHS requested NIOSH to provide additional analyses on suicide cases identified in the CAMS. NCCRAHS is now incorporating the results of these analyses in their suicide prevention programs and presentations (see [http://www.marshfieldclinic.org/nfmc/pages/default.aspx?page=nccrahs\\_presentations](http://www.marshfieldclinic.org/nfmc/pages/default.aspx?page=nccrahs_presentations)).

**Outcomes:** None to report.

### **Availability (e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.):**

A hardcopy of the 1995-2000 CAMS results are available through a peer-reviewed journal article released in 2004 (see “Outputs” for citation). Special data requests are available through NIOSH. Electronic versions of the data are not available.

### **Restrictions on Access:**

These data are not available to the public because of the confidential nature of the data. CAMS is protected under Section 308(d) of the Public Health Service Act. Special data runs are available to users through NIOSH by submitting a written request for summary data.

**Name of Surveillance System or Dataset:** The Fatality Assessment and Control Evaluation (FACE) Project—First Report database

**Owner/Manager/Contact:**

NIOSH, Morgantown, WV/John Sines/304-285-6105; Jsines@cdc.gov

**Description/Scope:**

The dataset includes standard information for each worker fatality investigated by NIOSH through the Fatality Assessment and Control Evaluation (FACE) program. The database includes information on the investigation (e.g. sources of information), incident (e.g. date, time), victim demographics (e.g. age, gender, industry and occupation), and circumstances (e.g. cause and type of death). The dataset currently consists of 630 records.

**Major Analyses Undertaken:**

This dataset is principally used to log and tabulate worker injury deaths investigated by the NIOSH in-house FACE program. The database has been used in the past to support summary analyses of FACE investigation reports, such as those done for monographs on confined spaces, falls and electrocutions. The utility of this database for this purpose has diminished over time as NIOSH increasingly uses findings from state-based investigations, which are not included in this database. While states maintain similar data for investigations they conduct, they do not routinely forward this data to NIOSH as a result of changes in how NIOSH cooperative agreements are administered.

**Outputs:**

NIOSH [1994]. Worker deaths in confined spaces. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, NIOSH pub. No. 94-103.

NIOSH [1998]. Worker deaths by electrocution: A summary of surveillance findings and investigative case reports. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, NIOSH pub. No. 98-131.

NIOSH [2000]. Worker deaths by falls: A summary of surveillance findings and investigative case reports. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, NIOSH pub. No. 2000-116.

**Intermediate Outcomes:**

**Outcomes:**

**Availability:** Electronic Access.

**Restrictions on Access:** Available upon request.

**Name of Surveillance System or Dataset:** The NIOSH Fatality Assessment and Control Evaluation (FACE) Webpage

**Owner/Manager/Contact:**

NIOSH, Morgantown, WV/Virgil Casini/304-285-6020; Vcasini@cdc.gov

**Description/Scope:**

The Fatality Assessment and Control Evaluation (FACE) webpage contains more than 1,600 FACE investigative reports that may be viewed or downloaded in their entirety. The reports include narratives summarizing the circumstances leading to a worker's death, and provide recommendations for preventing future deaths under similar conditions.

The reports have been categorized on the website by location (highway work zones), industry (agriculture, commercial aviation, commercial fishing, construction, logging and youth agriculture), cause (confined space, electrocution, falls, machine related, and motor vehicles), populations (Hispanic and youth), and state. These categories will allow interested end users to quickly access those reports that might be of interest to them. Interested parties may enter their email address into the listserv on the webpage and will then be electronically notified by email when a new report is posted on the webpage. Additionally, all reports completed by NIOSH staff from the year 2000 to the present contain an evaluation page that will allow end users to give NIOSH timely feedback that will allow NIOSH to monitor the usefulness of the reports and modify report content as necessary. The webpage also includes links to publications utilizing FACE reports and links to state FACE programs. These reports may be accessed at: <http://www.cdc.gov/niosh/face/>.

**Major Analyses Undertaken:**

NIOSH has completed comprehensive analyses of FACE investigations involving confined spaces, falls, and electrocutions. These analyses were featured in NIOSH publications that also included analyses of national surveillance data and FACE report summaries. Analyses summarizing FACE investigations involving young workers have been printed in peer-reviewed journals.

**Outputs** (*descriptive report, article, methodology, etc.*):

NIOSH Publications

To date, the FACE reports have been utilized as the basis for twenty NIOSH Alerts on a variety of subjects including forklifts, cranes, manure pits, skylights, scalping and scaffolds. Eleven of these Alerts have been translated into Spanish. Three monographs (confined space, electrocution, and falls) have been published. Three NIOSH Hazard IDs have been developed pertaining to wood chippers, moving large hay bales, and ignitions during the penetration of sealed frames of agricultural machinery. Two Workplace Solutions involving backhoes/excavators and ride-on roller compactors were disseminated internationally, and two Workplace Solutions addressing the human hazards of the animal antibiotic Micotil® and contact between overhead powerlines

and aluminum ladders are nearing finalization. These products were all based on the FACE reports and finalized publications can be accessed at:  
<http://www.cdc.gov/niosh/face/othpubs.html>

MMWR articles

Parker D, Boyle D, Wahl G et al. [1996]. Skid-Steer Loader-Related Fatalities in the Workplace in the United States, 1992-1996. MMWR 45(29): 624-628.

Parker D, Wahl G [1998]. Fatalities associated with large round hay bales -- Minnesota, 1994-1996. MMWR 47(2):27-30.

Higgins DN, Hendricks K, Struttman T, Tierney J [1999]. Deaths among children aged  $\leq 5$  years from farm machinery runovers--Iowa, Kentucky, and Wisconsin, 1995-1998, and United States, 1990-1995. MMWR 48(28):605-608.

Moore P, Burkhart J [2001]. Baler and compactor-related deaths in the workplace--United States, 1992-2000, MMWR 50(16):309-313.

External publications authored by NIOSH staff:

Styles L, Cierpich H, Rogge J, Higgins D, Harrison R [2005]. To live and die in Los Angeles: the California Fatality Assessment and Control Evaluation (FACE) program: 1992 - 2002, 2005 National Injury Prevention and Control Conference, Denver, Colorado, May 9-11, 2005 Atlanta, GA: Centers for Disease Control and Prevention.

Helmkamp JC, Bell JL, Lundstrom WJ, Ramprasad J, Haque A [2004]. Assessing safety awareness and knowledge and behavioral change among West Virginia loggers, Inj Prev 10(4):233-238.

Higgins DN, Tierney J, Lins M, Hanrahan L [2004]. School Nurses: A Resource for Young Worker Safety, J Sch Nur 20(6):317-323. (The Editor's publication notification letter indicates that the article was sent to the 12,000 members of the National Association of School Nurses.)

Tierney JM, Higgins DN, Hanrahan LP, Washburn MJ [2003]. Preventing Youth Worker Fatalities [Abstract] In: National Occupational Injury Research Symposium 2003, October 28-30, 2003, Pittsburgh, PA: <http://www.cdc.gov/niosh/noirs/noirsmain.html>.

Higgins D, Tierney J, Hanrahan L [2002]. Preventing youth worker fatalities: the Fatality Assessment and Control Evaluation (FACE) Program, AAOHN 50(11):508-514.

Higgins DN, Casini VJ, Bost P, Johnson W, Rautiainen R [2001]. The Fatality Assessment and Control Evaluation program's role in the prevention of occupational disease, Injury Prevention 7(Suppl 1):i27-i33.

Examples of external articles by State-based authors:

Hallman EM, Gelberg KH, and Hallisey JL. A NY FACE Case Study: Dairy Farm Owner Dies during Manure Pump PTO Entanglement, *Journal of Agromedicine*, 2005; Vol 10(3).

Chester DA, Hanna EA, Pickelman BG, Rosenman KD. Asthma death after spraying polyurethane, *American Journal of Industrial Medicine*, Volume 48, Issue 1, Date: July 2005, Pages: 78-84.

MN FACE [ 2004]. Summertime Baling: A Time of Increased Risk on Minnesota Farms. *Southwest Minnesota Farmer*, Vol 1 (15), 2004.

IA FACE [2003]. Investigating a Fatal Tree Shear Incident. *Arbor Age*, April 2003.

**Intermediate Outcomes:**

- A packet containing a sample of four crane-related FACE reports and a page from the NIOSH Alert, “Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Powerlines” was mailed to approximately 4,600 crane rental and crane service establishments across the nation. The packet described crane-related injury risks and steps employers can take to prevent worker death and injury. Recipients were encouraged to use these materials for training purposes, toolbox talks, and as support for safety program development. A crane rental company requested over 100 copies to issue with each crane rented. A construction contractor who requested multiple copies praised the packet as the most useful safety tool he ever received from the government. “I had heard about the accidents, but didn't know the causes. I will circulate the publication among my employees who work with cranes. It will give us an opportunity to discuss crane safety using real life examples. I am sure my employees will find it as fascinating as I did.”
- During 2000 and 2001, NIOSH received five reports of worker death associated with excavators or backhoe loaders as part of the Fatality Assessment and Control Evaluation (FACE) program. These incidents involved two fatal injury scenarios: being struck by the moving machine or by swinging booms and buckets; or, being struck by quick-disconnect excavator buckets that unexpectedly detached from the excavator. In response to these incidents, NIOSH developed a Workplace Solution entitled *Preventing Injuries and Deaths When Working With Hydraulic Excavators and Backhoe Loaders*. The Association of Equipment Manufacturers provided NIOSH with an international mailing list with over 200 entries for dissemination purposes. Several OSHA regional offices that are focusing on hazards associated with excavators and backhoes have requested copies for distribution. Much of the information in this Workplace Solution was derived from the FACE reports.
- Mr. Craig Lekutis, President, Wireless estimator.com developed an article on the use of NIOSH telecommunication tower-related FACE reports as training aids for the wireless industry. Wireless Estimator.com is a free internet service for the wireless



industry. The article provided links to the FACE reports and can be found at:  
[http://www.wirelessestimater.com/breaking\\_news.cfm](http://www.wirelessestimater.com/breaking_news.cfm).

- Sarah Sanders Smith, Assistant Professor of Organizational Leadership & Supervision, Purdue University North Central contacted the In-house FACE project officer and said that she is developing for Purdue University an Occupational Safety and Health training program that will establish Purdue University as the educational center for Occupational Safety and Health in the state of Indiana. She is using the NIOSH page in general and the FACE program in particular in the development of this program. The FACE program and the FACE reports and other FACE materials such as Workplace Solutions and Alerts will be used as a basis for training modules and in the development and establishment of prevention strategies for this program.
- Ms. Ellen Parson, contributing Editor for *American Reconstruction Magazine*, a new periodical aimed at contractors performing reconstruction after demolition efforts and/or after natural disasters, interviewed the FACE project officer. A discussion was held on the use of portable generators (electrical and CO hazards), the use of rough-duty extension cords, and the importance of treating all conductors as energized unless they have been verified as de-energized. Ms. Ayrd also wanted information on the FACE program, and liked the FACE reports written after the electrocutions investigated in Puerto Rico following Hurricane Hugo. Ms. Ayrd said she would reprint these reports in the magazine along with other relevant reports. The first few issues of the magazine will contain information from the NIOSH and FACE web pages. The first article entitled “The Shocking Truth—Beware of Electrical Hazards” was published in the July 2006 issue (<http://www.ecmweb.com/>).
- In a study funded by CPWR using NIOSH grant funding, Michael Behm from East Carolina University analyzed fatality reports from FACE investigations and linked them back to the design-for-safety concept (Linking construction fatalities to the design for construction safety concept, Behm M, SAFETY SCIENCE , 43 (8): 589-611 OCT 2005). FACE cases were used to assess the potential of designing safety into construction projects.
- NIOSH has received feedback on a number of ways in which stakeholders use FACE findings and recommendations to educate employers, workers and the public about work hazards and prevention measures. For example, the Occupational Safety and Health Administration, the American Bureau of Crane Inspection, Inc., West Virginia University, North Carolina State University, and trade associations report using the materials for training. Publications such as Technical Rescue, based in the United Kingdom, reprint FACE reports.

**Outcomes:**

**Availability:**

Complete web access to all reports is available.

**Restrictions on Access:**

There are no restrictions on access to the FACE reports. Interested parties may enter their email address into the listserv on the webpage and will then be electronically notified by email when a new report is posted on the webpage.

**Name of Surveillance System or Dataset:**

Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) database

**Owner/Manager/Contact:**

Contact: Steven Proudfoot, Division of Safety Research (DSR)

**Description/Scope:**

Three separate databases contain information collected during fire fighter traumatic injury investigations. The primary dataset contains information regarding the incident, the victim, and the fire department. Two supplementary datasets hold detailed information related to structure fires and motor vehicle incidents.

Used in conjunction with individual incident reports, the database helps provide information for developing broad-based recommendations and supplemental documents (Alerts, Workplace Solutions, and Fact Sheets) for fire fighter injury prevention programs. Personal and fire department identifiers are not included in the database.

**Major Analyses Undertaken:**

Analysis of civilian occupancy in burning structures, in support of a NIOSH Alert and a journal manuscript authored by ASPH fellow. Analysis of motor vehicle-related incidents for NIOSH Alert.

**Outputs** (*descriptive report, article, methodology, etc.*):

Annual reports, 2001-2003, disseminated on the FFFIPP website.

**Intermediate Outcomes:**

A special tabulation of firefighter fatalities in which self-contained breathing apparatus was worn by the victim was performed at the request of the National Fire Academy.

A special tabulation of motor vehicle incidents regarding the age of the fire department apparatus involved in crashes was run for a National Fire Protection Association committee meeting.

A firefighting.com article, “What Happens If We Confuse Our Survival Instincts?” written by Jerry Smith, a former Los Angeles City Fire Captain and California Governor's Office of Emergency Services Fire & Rescue Division Assistant Chief, used data from the 2002 annual report. (<http://www.firefighting.com/articles/namFullView.asp?namID=9126>)

Anecdotal information has been received from fire service stakeholders related to documents that use data from the NIOSH FFFIPP databases, including information on reader response cards to NIOSH publications:

*“I find the NIOSH Reports and Alerts on fire fighter deaths very informative. We utilize the information to change attitudes.”*

*“Thank you very much. Very informative and easy to be used in our training program.”*

**Outcomes:**

**Availability** (e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.):

SAS datasets

**Restrictions on Access:**

NIOSH/DSR employees only.

**Name of Surveillance System or Dataset:** National Agricultural Workers Survey (NAWS)

**Owner/Manager/Contact:**

Owner: U.S. Department of Labor, Education and Training Administration (USDOL, ETA)

Manager: John Myers, NIOSH, DSR

Contact: John Myers, NIOSH, DSR

**Description/Scope:**

The NAWS is an annual survey conducted by USDOL, ETA to collect demographic, economic, and work history information on crop farmworkers in the U.S. NAWS collects these data using a large probability sample of all farmworkers across the U.S. Over 75 percent of these workers are seasonal, migrant, or both. NIOSH, through an interagency agreement with USDOL, has incorporated a farm injury module into the NAWS. The module collects basic information on: the nature of injury; the body part injured; the type of work being performed that lead to the injury; the source of the injury; and what, if any medical treatment was received. NAWS injury data are available for the years 1999 and 2001 through 2004.

**Major Analyses Undertaken:**

The 1999 NAWS injury data have been analyzed. Estimates for demographics and injuries have been produced at the national levels. Data from this analysis have been released within one NIOSH publication and at several conferences (See “Outputs” for citations). Analyses of the 2001-2004 NAWS injury data are ongoing.

**Outputs (descriptive report, article, methodology, etc.):**

NIOSH Numbered Document:

NIOSH. [2004]. Worker Health Chartbook, 2004. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2004-146. (Pages 195-211 of this publication contain agricultural data developed in part from the NAWS).

Presentations:

Myers JR. [1999]. Work-related injuries among hired, non-family farm workers. The Dynamics of Hired Farm Labor: Constraints and Community Response, October 25-26, 1999, Concordville, PA.

Myers JR. [2000]. Work-related injuries among hired, non-family farm workers. Agricultural Safety and Health in a New Century, April 28-30, 2000, Cooperstown, New York.

Myers JR. [2000]. Comparison of farmworker injury and fatality experiences to all U.S. workers. Presented at the 13th Annual East Coast Migrant Stream Forum, Double Tree Hotel, Philadelphia, PA, November 3-5, 2000.

**Intermediate Outcomes:** None to report.

**Outcomes:** None to report.

**Availability (e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.):**

A hardcopy of the basic 1999 NAWS results are available as part of the NIOSH 2004 chartbook (see “Outputs” for citation). A hard copy of the 2001-2004 NAWS should be available in 2008. Special data requests are available through USDOL, ETA and NIOSH. Electronic versions of the data are not currently available, but are being developed.

**Restrictions on Access:**

Under the terms of the interagency agreement between NIOSH and USDOL, ETA, ownership of the NAWS is retained by USDOL, ETA. The injury module is not currently available in electronic form. Rules for electronic access to the NAWS injury module are in process. Special data runs are available to users through USDOL, ETA and NIOSH by submitting a written request for summary data.

**Name of Surveillance System:** National Electronic Injury Surveillance System for Occupational Injuries and Illnesses (NEISS-Work)

**Owner/Manager/Contact:**

**Owner:** U.S. Consumer Product Safety Commission and NIOSH

**Manager/Contact:** Larry Jackson, NIOSH, Morgantown, WV; (304) 285-5980, LLJackson@cdc.gov

**Description/Scope:**

NEISS is a national stratified probability sample of hospitals in the U.S. and its territories that have a minimum of six beds and that operate a 24-hour emergency department. Hospitals in the sample were selected from the approximately 5,300 rural and urban U.S. hospitals after stratification by total annual emergency department visits. Nominally, 67 geographically distributed sample hospitals capture work-related injuries and illnesses every day of the year (note: the occupational injury hospital sample is a subset (2/3) of the hospital sample used by CPSC for capture of product-related injuries). All treated cases that are identifiable as work-related are captured and information is abstracted from the medical record. Each case is assigned a statistical weight based on the inverse probability of selection. National estimates are obtained by summing weights for all cases or particular cases of interest. Statistical weights are adjusted within a sample year to account for hospital mergers, hospital closings or withdrawal from NEISS (i.e., less than 67 hospitals reporting information), and incomplete reporting. Statistical weights are adjusted annually based on the number of U.S. hospitals and their total number of ED visits as determined by the most recent census of U.S. hospitals.

**NEISS case definition:**

**Medical:** Nonfatal injuries and illnesses treated in an emergency department.

**Population:** Civilian non-institutionalized workers.

**Work:** Doing work for pay or other compensation, including arriving or leaving work but on the employer's premises, during transportation between locations as a part of the job (excluding commuting to or from home); doing agricultural production activities; and working as a volunteer for an organized group (e.g., volunteer fire department).

**Demographics:** All workers without restriction by age, type of employer or industry (e.g., self-employed, private industry, or government), or employer size.

**Case exclusions:** Injuries or illnesses to active duty Military, National Guard, and State Militia; injuries or illnesses to institutionalized persons including prisoners or mental health patients; common illnesses (e.g., colds and flu); routine drug and alcohol screening; and revisits to the same ED for a previously treated injury or illness.

Uniform NEISS-Work data for all work-related injuries and illnesses are available for analysis from 1998 through the present. Other NEISS-Work data are available prior to the 1997 sample design change based on varying collection criteria: 1981-1987 and 1992-1997.

### **Major Analyses Undertaken:**

Overall summaries of work-related ED-treated injuries and illnesses

- Young and older worker injuries
- Injuries among African-American women
- Injuries among emergency responders
- Injuries among youth on farms
- Violence-related injuries
- Bloodborne pathogen exposures
- Fall-related injuries
- Inhalation injuries
- Eye injuries
- Hospitalized injuries

### **Outputs:**

Marsh S, Derk S, Jackson L, 2006. Nonfatal occupational injuries and illnesses among workers treated in hospital emergency departments--United States, 2003: *MMWR Morb Mortal Wkly Rep*, April 28, 2006/ 55(16)/449-52. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5516a2.htm>

Layne LA, Pollack KM 2004. Nonfatal occupational injuries from slips, trips, and falls among older workers treated in hospital emergency departments, United States 1998: *Am J Ind Med*; 46:32-41.

Mardis AL, Pratt SG, 2003. Nonfatal injuries to young workers in the retail trades and services industries in 1998: *J Occup Environ Med*; 45(3):316-323.

Jackson LL, 2001. Non-fatal occupational injuries and illnesses treated in hospital emergency departments in the United States: *Inj Prev*; 7(Suppl I):i21-26.

Jackson LL, 2001. Nonfatal occupational injuries and illnesses treated in hospital emergency departments--United States, 1998. *MMWR Morb Mortal Wkly Rep*, April 27, 2001/ 50(16)/313-7. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5016a3.htm>

Chen GX, Hendricks KJ, 2001. Nonfatal occupational injuries among African-American women by industrial group: *J Safety Res*; 32:75-84.

Henneberger PK, Metayer C, Layne LA, Althouse R, 2000. Nonfatal work-related inhalations: surveillance data from hospital emergency departments, 1995-1996: *Am J Ind Med*; 38:140-148.  
Hendricks KJ, Layne LA, 1999. Adolescent occupational injuries in fast food restaurants: an examination of the problem from a national perspective: *J Occ Environ Med*; 41(12):1146-1153.



Chen GX, Layne LA, 1999. Where African-American women work and the nonfatal work-related injuries they experienced in the U.S. in 1996, compared to women of other races: *Am J Ind Med*; Suppl. 1:34-36.

CDC, 1998. Youth agricultural work-related injuries treated in emergency departments--United States, October 1995-September 1997: *MMWR Morb Mortal Wkly Rep*; September 11, 1998, 47(35):733-7. <http://www.cdc.gov/mmwr/preview/mmwrhtml/00054662.htm>

CDC, 1998. Surveillance for nonfatal occupational injuries treated in hospital emergency departments--United States, 1996: *MMWR Morb Mortal Wkly Rep*, April 24, 1998, 47(15):302-6. <http://www.cdc.gov/mmwr/preview/mmwrhtml/00052225.htm>

Layne LA, Landen DD, 1997. A descriptive analysis of nonfatal occupational injuries to older workers, using a national probability sample of hospital emergency departments: *J Occup Environ Med*; 39(9):855-865.

Castillo D, Rodriguez R, 1997. Follow-back study of oldest workers with emergency department-treated injuries: *Am J Ind Med*; 31:609-618.

Knight EB, Castillo DN, Layne LA, 1995. A detailed analysis of work-related injury among youth treated in emergency departments: *Am J Ind Med*; 27:793-805.

Layne LA, Castillo DN, Stout N, Cutlip P, 1994. Adolescent occupational injuries requiring hospital emergency department treatment: a nationally representative sample: *Am J Public Health*; 84(4):657-660.

CDC, 1983. Occupational finger injuries--United States, 1982: *MMWR Morb Mortal Wkly Rep*; 32(45):589-591. <http://www.cdc.gov/mmwr/preview/mmwrhtml/00000174.htm>

Coleman PJ, Sanderson LM, 1983. Surveillance of occupational injuries treated in hospital emergency rooms--United States, 1982: *MMWR Surveil Summ*; 32(2SS):31SS-37SS. [http://www.cdc.gov/mmwr/preview/ind83\\_ss.html](http://www.cdc.gov/mmwr/preview/ind83_ss.html)

### **Intermediate Outcomes:**

NEISS-Work data have been used to support recommended changes to US Department of Labor Hazardous Orders for Young Workers.

The NIOSH Work-RISQS public query site has been used by external researchers as the sole data source to produce a peer-reviewed journal article (Xiang H, Stallones L, Chen G, Smith GA, 2005. Work-related eye injuries treated in hospital emergency departments in the US: *Am J Ind Med*; 48:57-62).

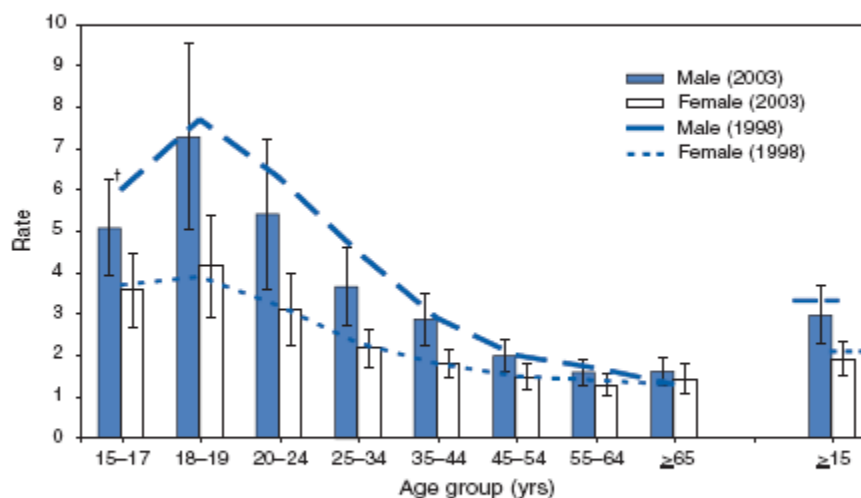
Through the use of NEISS data on occupational eye injuries, there has been a significant increase in awareness of work-related safety issues and the magnitude of these injuries in the workplace. Based on NEISS results there has been recognition that about 2,000 work-related eye injuries are

treated daily in the U.S. (a doubling of previous estimates). Our work has supported eye safety efforts by Prevent Blindness America, the ANSI Z87 Eye and Face Protection Committee, and, in particular, the National Eye Institute’s Healthy Vision Month, May 2006 occupational eye safety campaign ([www.healthyvision2010.org/hvm](http://www.healthyvision2010.org/hvm) and <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5520a9.htm>).

### Outcomes:

The NEISS data can be used to track progress in reducing nonfatal occupational injuries over time. Although the NEISS data include occupational illnesses, injuries predominate. The overall number and rate of occupational injuries and illnesses has not changed substantially since 1998, the earliest year with consistent NEISS work data. In 2003, age-, sex-, and diagnosis-related patterns of injury and illnesses among workers treated in EDs (ED-treated injuries/illnesses) were similar to those in 1998 (see Figure 1 from Nonfatal Occupational Injuries and Illnesses Among Workers Treated in Hospital Emergency Departments --- United States, 2003; MMWR April 28, 2006/ 55(16);449-452; available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5516a2.htm>).

**FIGURE 1. Estimated rates\* of nonfatal occupational injuries and illnesses among workers treated in hospital emergency departments, by age group and sex of worker — United States, 1998 and 2003**



\* Per 100 full-time equivalent (FTE) workers; one FTE = 2,000 hours worked per year and includes hours for all jobs worked by a person.

† 95% confidence interval (CI). CIs not shown for 1998 but similar in magnitude to CIs for 2003.

Two objectives for Healthy People 2010, reducing young worker and occupational eye injuries, rely on NEISS-Work data for tracking of progress over the decade. Healthy People 2010 includes an objective to reduce youth emergency department injury rates to 3.4 injuries/100 fulltime equivalents by 2010. The rate in 2003 was 4.4. injuries/100 full-time equivalents. The Healthy Vision 2010 objective on reducing occupational eye

injuries treated in emergency departments has a goal of a 30% reduction in the eye injury rate from a 1999 baseline rate of 21.0 to the target of 14.7 injuries per 10,000 full-time workers.

**Availability:**

NEISS microdata files are available electronically for authorized internal data users. Public access is available for tabular results through NIOSH's Work-Related Injury Statistics Query System (Work-RISQS at <http://www2a.cdc.gov/risqs>). Two data years are currently available at Work-RISQS. More data years will be available in the near future. Tabular results for studies of limited scope are also available to the public including external researchers upon request to the Division of Safety Research Surveillance and Field Investigations Branch.

**Restrictions on Access:**

NEISS-Work data are protected primarily by the U.S. Consumer Product Safety Act and the Privacy Act. Microdata access is restricted to authorized NIOSH staff (permanent and temporary), qualifying guest researchers (on-site only), and contractors who comply with the DSR Confidentiality Program requirements. Censored tabular results are provided through Work-RISQS and upon request to the Division of Safety Research Surveillance and Field Investigations Branch.

**Name of Surveillance System or Dataset:** National Traumatic Occupational Fatalities (NTOF) Surveillance System

**Owner/Manager/Contact:**

- Data Owner: NIOSH, Division of Safety Research
- Manager: Suzanne Marsh, NIOSH, Division of Safety Research
- Primary Contact: Suzanne Marsh, NIOSH, Division of Safety Research

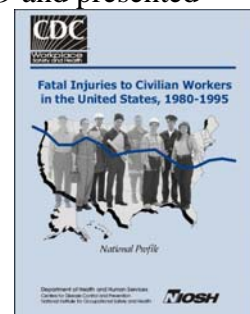
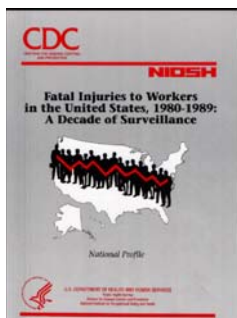
**Description/Scope:**

Accurate reporting of workplace fatalities is a critical component for determining prevention priorities. Prior to the 1980s, however, no systematic national data collection of traumatic occupational fatalities existed. Recognizing this gap and the disparity in existing estimates, NIOSH began collecting fatality surveillance data through the NTOF surveillance system in the mid 1980s to gain a better understanding of the most severe work-related injuries. NIOSH developed NTOF by collecting death certificates from state vital registrars in all 50 states, New York City, and the District of Columbia. Death certificates were included if the decedent was 16 years of age or older; if the death was an external cause based on the International Classification of Diseases, Ninth Revision (1980-1998) or the international Classification of Diseases, Tenth Revision (1999-2001); and there was a positive response to the “Injury at work?” item. Demographic, industry, occupation, and circumstances of death were abstracted for fatalities occurring from 1980 through 2001. Through the NTOF, NIOSH provided for the first time a uniform surveillance system of work-related injuries for all industries. This collection of death certificates filled a critical data need in identifying and understanding workplace fatalities.

**Major Analyses Undertaken:**

Although many analyses conducted over the last 20 years have included NTOF data, major analyses have included three comprehensive analyses of NTOF, tractor-related fatalities, homicides, fatalities involving young workers, and falls from elevation.

Three comprehensive analyses were conducted on the NTOF data and published as NIOSH publications. The first publication, released in 1989, included 6 years of data (1980-1985) and presented text and graphs to describe fatalities by type, sex, age, state of death, industry, and occupation. To compare state experiences, the document also presented state fatality rates by industry. A second publication, released in 1993, extended the initial analysis to include data from 1986 through 1989 and presented summary data by cause of death. This document provided a more comprehensive summary of fatal occupational injuries for the U.S. and examined the patterns of work-related injury fatalities in each state. Yet a third publication, released in 2001, presented data from 1980-1995. Unlike the first two publications that included graphs and text that interpreted the graphs, this third document presented detailed data in tabular format in an effort to provide the occupational safety and health community with direct access to



the NTOF data. Data from all three were cited in various news releases and were widely publicized by NIOSH. These publications also directed NIOSH and others to areas where more detailed research was needed.

Analyses of agriculture-related fatalities from NTOF have directed many of the projects that NIOSH has conducted, especially in the area of tractor safety. A 1989 analysis of NTOF agriculture-related deaths was one of the first NIOSH efforts to report that farm tractors caused, by far, the largest number of deaths (Table 1).

Table 1. Machinery-related Agricultural Deaths by Machine Type, 1980-1985  
 (Source: NIOSH NTOF)

Machine Type	Deaths
Farm Tractor	924
Other Agriculture Machines	483
Lifting Machines	39
Earthmoving Machines	29
Other Specified Machine	36
Unspecified Machines	14

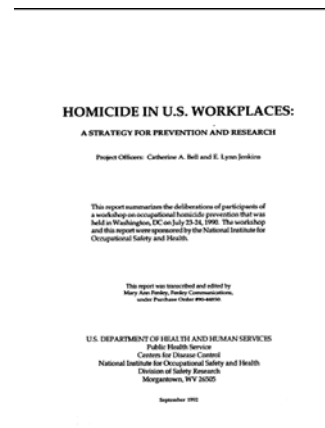
This initial study and numerous subsequent reports clarified the magnitude of tractor-related fatalities and set the course for much of the NIOSH research that followed. NIOSH and others have devoted much research to developing rollover protective structures (ROPS) to prevent a high proportion of the farm fatalities.

In the late 1980s, descriptive analyses on NIOSH’s NTOF surveillance system identified homicides as a leading cause of work-related injury death in the U.S. This national recognition formed the basis of NIOSH’s efforts that began in the early 1990s to address this serious public health problem. NIOSH convened a panel of experts in 1990 to

discuss the findings from NTOF and gather input on priorities for strategies to reduce the number of workplace homicides. The results of these discussions were published in a 1992 NIOSH document entitled Homicide in US Workplaces: A Strategy for Prevention and Research (DHHS (NIOSH) Publication No. 92-103).

After these initial discussions, the homicide data from NTOF were analyzed in greater detail and published in a 1993 NIOSH Alert entitled Request for Assistance in Preventing Homicide in the

Workplace (DHHS (NIOSH) Publication No. 93-109). Publicized as the most extensive study on workplace homicides at that time and one of the first to offer definitive prevention measures, the Alert provided background information and detailed data from NTOF, a discussion of risk



factors, and recommended prevention measures. Although there were other subsequent reports on homicides, the most significant of these included an analysis of homicides by detailed industry and occupation.

An additional landmark analysis conducted by NIOSH in the early 1990s was an analysis of young worker deaths. Based on the finding that the full-time equivalent rate for workers 16-17 years old was similar to the rate for adults, the authors concluded that improved enforcement of and compliance with federal and child labor laws and more education were needed to address the high fatality rate among youth. These findings prompted a 1995 NIOSH Alert entitled Request for Assistance in Preventing Deaths and Injuries of Adolescent Workers which included the results of an analysis of NTOF data. These early analyses fueled new partnerships as NIOSH began working closely with safety and health officials, researchers and advocacy groups to improve the safety of young workers.



Finally, in 2000, NIOSH conducted a comprehensive analysis of fatal falls from elevation, which was a component of a NIOSH monograph on preventing fatal falls from elevation. Comprehensive analyses of NTOF data complemented analyses of data from fatality investigations and individual case fatality reports.

**Outputs** (*descriptive report, article, methodology, etc.*):

The primary output from this project is the NTOF database that is accessible by researchers within NIOSH. Results from these data have been disseminated per specific requests for NTOF analyses and through NIOSH publications and scientific journals.

NIOSH Publication Sub-category:

CDC (1987). Traumatic occupational fatalities—United States, 1980-1984. MMWR 36(28):461-474, 469-470.

CDC (1994). Occupational injury deaths--United States, 1980-1989. MMWR43(14)262-264.

CDC (1994). Occupational injury deaths of postal workers--United States, 1980-1989. MMWR 43(32):587-595.

CDC (1998). Fatal occupational injuries—United States, 1980-1994. MMWR 47(15)/297-302.

CDC (1999). Achievements in Public Health, Improvements in Workplace Safety--United States, 1900-1999. MMWR 48(22)/461-469.

CDC (2001). Fatal occupational injuries—United States, 1980-1997. MMWR 50(16)/317-320.

NIOSH (1989). National traumatic occupational fatalities: 1980-1985. DHHS (NIOSH) Pub. No. 89-116.

NIOSH (1993). Fatal injuries to workers in the United States, 1980-1989: A decade of surveillance, national profiles. DHHS (NIOSH) Pub. No. 93-108.

NIOSH (1993). Fatal injuries to workers in the United States, 1980-1989: A decade of surveillance, national and state profiles. DHHS (NIOSH) Pub. No. 93-108S.

NIOSH (1993). NIOSH Alert: Preventing homicide in the workplace. DHHS (NIOSH) Pub. No. 93-109.

NIOSH (1994). Worker deaths in confined spaces: A summary of surveillance findings and investigative case reports. DHHS (NIOSH) Pub. No. 94-103.

NIOSH [1994]. Comments of the National Institute for Occupational Safety and Health on the Department of Labor/Wage and Hour Division advance notice on proposed rulemaking on child labor regulations, orders and statements of interpretation, October 25, 1994.

NIOSH (1996). NIOSH Current Intelligence Bulletin 57: Violence in the workplace risk factors and prevention strategies. DHHS (NIOSH) Pub. No. 96-100.

NIOSH (1998). Worker deaths by electrocution: A summary of surveillance findings and investigative reports. DHHS (NIOSH) Pub. No. 98-131.

NIOSH (1998). NIOSH Alert: Preventing worker injuries and deaths from traffic-related motor vehicle crashes. DHHS (NIOSH) Pub. No. 98-142.

NIOSH (2000). Worker deaths by falls: A summary of surveillance findings and investigative case reports. DHHS (NIOSH) Pub. No. 2000-116.

NIOSH (2000). Worker health chartbook, 2000. DHHS (NIOSH) Pub. No. 2000-127.

NIOSH [2000]. Comments of the National Institute for Occupational Safety and Health on the Department of Labor notice of proposed rulemaking and request for comments on child labor regulations, orders, and statements of interpretation. Child Labor Violations--- Civil Money Penalties: 29 CFR Parts 570 and 579, January 28, 2000.

NIOSH (2001). Fatal injuries to civilian workers in the United States, 1980-1995. (National profile). DHHS (NIOSH) Pub. No. 2001-129.

NIOSH (2001). Fatal injuries to civilian workers in the United States, 1980-1995. (National and state profiles). DHHS (NIOSH) Pub. No. 2001-129S.

NIOSH [2002]. National Institute for Occupational Safety and Health (NIOSH) Recommendations to the U.S. Department of Labor for Changes to Hazardous Orders. May 3, 2002.

NIOSH (2004). Worker health chartbook, 2004. DHHS (NIOSH) Pub. No. 2004-146.

External Publication Sub-category:

Adekoya N, Myers JR (1999). Fatal harmful substances or environmental exposures in agriculture, 1992 to 1996. *J Occup Environ Med* 41(8):699-705.

Agnew J, Suruda AJ (1993). Age and fatal work-related falls. *Hum Factors* 35(4):731-736.

Bailer AJ, Stayner LT, Stout NA, Reed LD, Gilbert SJ (1998). Trends in rates of occupational fatal injuries in the United States (1983-92). *Occup Environ Med* 55(7):485-489, 1998.

Bell CA (1991). Female homicides in United States workplaces, 1980-1985. *Am J Public Health* 81(6):729-732.

Bena JF, Bailer AJ, Loomis D, Richardson D, Marshall S (2004). Effects of data limitations when modeling fatal occupational injury rates. *Am J Ind Med* 46(3):271-283.

Biddle EA, Hartley D (2000). Fire- and flame-related occupational fatalities in the United States, 1980-1994. *J Occup Environ Med* 42(4):430-437.

Biddle EA, Hartley D (2002). Fire and flame related events with multiple occupational injury fatalities in the United States, 1980-1995. *Inj Control Safety Promot* 9(1):9-18.

Biddle EA, Kisner SM (1998). Denominator effects on traumatic occupational fatality incidence rates.

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### **Intermediate Outcomes:**

Since initiating the collection of data through the NTOF surveillance system in the mid 1980s, NIOSH has been a leader in improving knowledge on characteristics of occupational fatalities. Within NIOSH, the FACE program has relied heavily on NTOF data to select investigation priorities and support program recommendations. NTOF has also been frequently cited by NIOSH and others as evidence to support or influence more detailed analyses or direct specific safety research projects.

Although the NTOF surveillance data have led to a greater understanding of the industries and occupations at high risk and a greater public awareness of the causes and circumstances surrounding workplace fatalities, limitations inherent in conducting surveillance solely based on death certificates were well recognized. These limitations influenced the National Academy of Science Panel on Occupational Safety and Health Statistics' recommendation for development of a more comprehensive national fatality census (Pollack & Keimig, 1987). This led directly to the development of the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI) system that became fully operational in 1992. After a decade of overlap, NIOSH discontinued the NTOF data collection at the end of 2001 and now uses the CFOI data for occupational fatality surveillance.

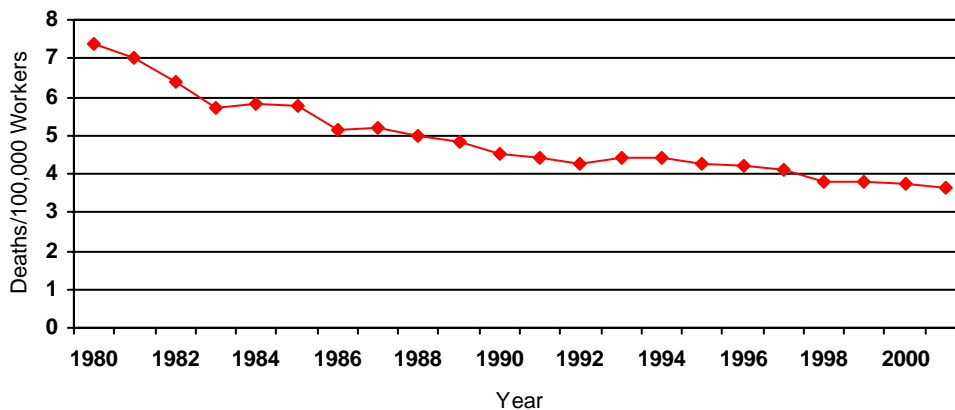
### **Outcomes:**

#### ***OVERALL FATALITIES***

In the mid 1980s, NIOSH initiated a systematic national collection of workplace fatalities through the National Traumatic Occupational Fatalities (NTOF) surveillance system. For the first time, NTOF provided a uniform surveillance system of work-related fatal injuries for all industries. NTOF successfully filled a critical data need by providing a measurement system for tracking outcomes and important data that many in NIOSH and elsewhere used to direct more detailed projects to address specific causes of death or high-risk worker groups.

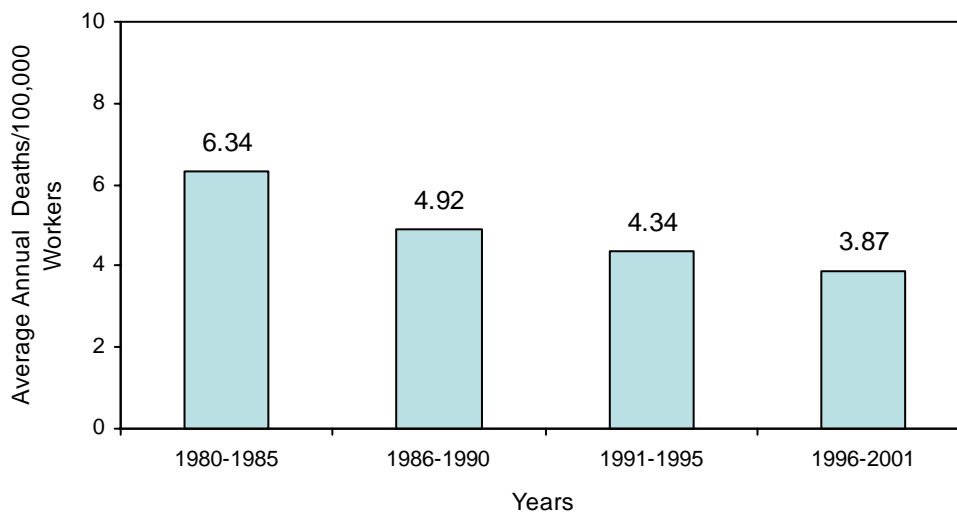
Work-related fatality rates in the U.S. have decreased 51% from 1980 through 2001 based on data from the NTOF surveillance system (Figure 1). The 6-year average fatality rate for the period 1996-2001 decreased 39% compared to the 6-year time period 1980-1985 (Figure 2).

Figure 1. Occupational Fatality Rates by Year\*  
(Source: NIOSH NTOF 1980-2001)



\*Data for 2001 exclude deaths associated with September 11.

Figure 2. Annual Average Fatality Rates for Four Time Periods Between 1980 and 2001\* (Source: NIOSH NTOF)



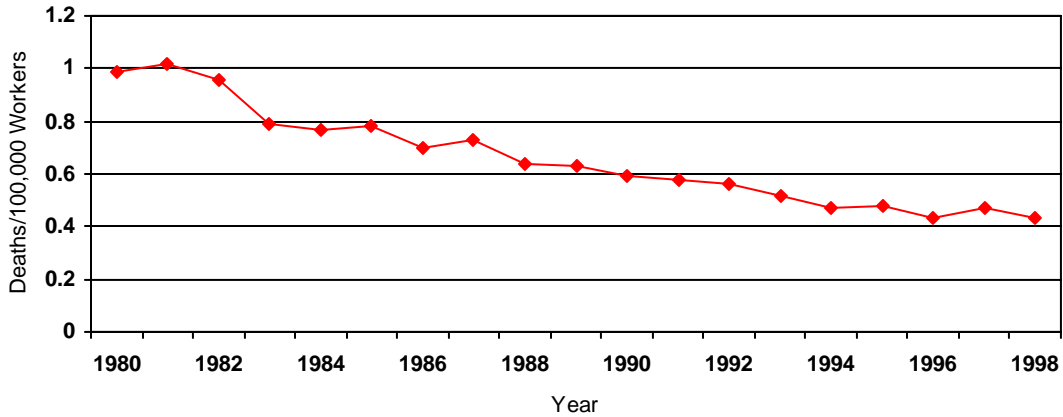
\*Data for 2001 exclude deaths associated with September 11.

## MACHINES

NIOSH has been conducting research on machine safety since the early 1970s. With the introduction of the NTOF surveillance system, NIOSH was able to quantify the number of machine-related fatalities and the characteristics of the machines that caused many of the reported fatalities. These results helped stimulate and direct NIOSH's research on machine safety, especially in the agriculture industry.

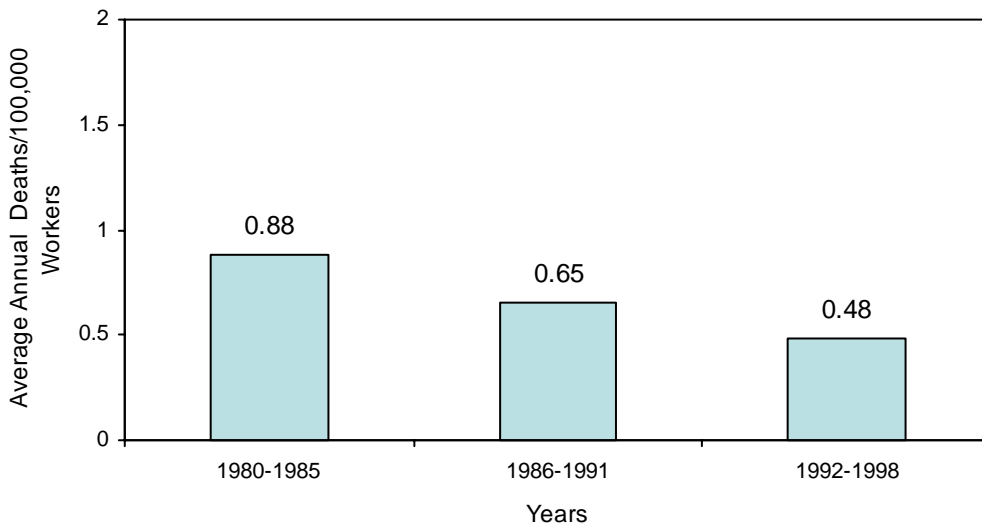
Work-related fatality rates for all machines have decreased 57% from 1980 through 1998 based on data from the NTOF surveillance system (Figure 3). The average fatality rate for machine-related deaths for the 7-year period 1992-1998 decreased 45% compared to the fatality rate for the time period 1980-1985 (Figure 4).

Figure 3. Occupational Fatality Rates for Machine-related Deaths  
 (Source: NIOSH NTOF 1980-1998\*)



\*Because of significant inconsistencies in machinery codes assigned to the 1980-1998 and 1999-2001 data, data for the later years of NTOF are not presented.

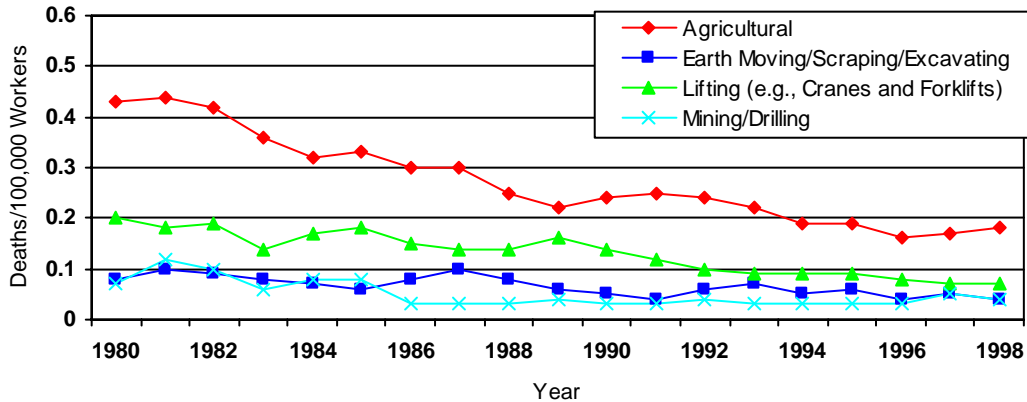
Figure 4. Annual Average Machine-related Fatality Rates for Three Time Periods  
 Between 1980 and 1998\* (Source: NIOSH NTOF)



\*Because of significant inconsistencies in machinery codes assigned to the 1980-1998 and 1999-2001 data, data for the later years of NTOF are not presented.

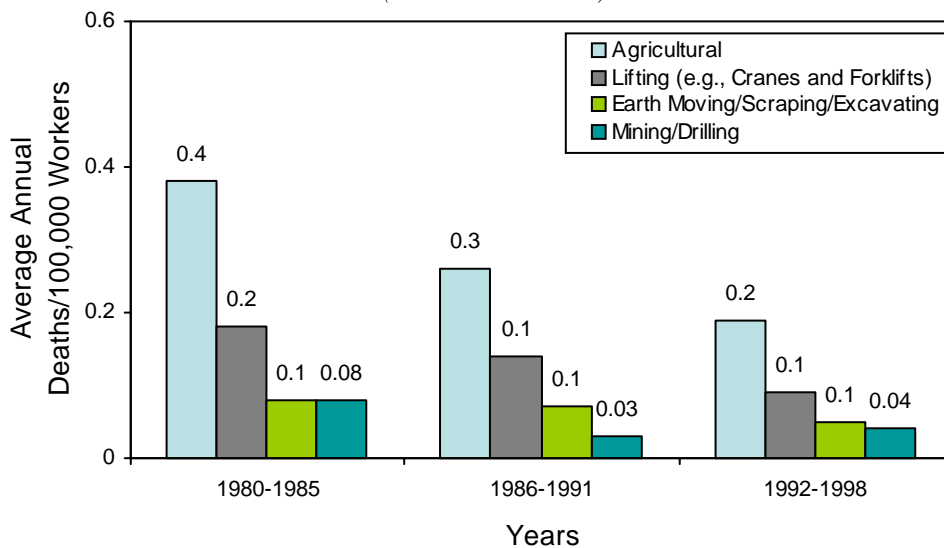
NTOF surveillance data enabled NIOSH researchers and others to establish research priorities for projects targeting specific machine types (e.g., tractors). From 1980 through 1998, rates for agricultural machinery-related fatalities decreased 58% (Figure 5). The fatality rates for selected machine types for the 7-year time period 1992-1998 decreased 38-50% compared to the rates for the 6-year time period 1980-1985 (Figure 6).

Figure 5. Occupational Fatality Rates for Machine-related Deaths by Selected Machine Types (Source: NIOSH NTOF 1980-1998\*)



\*Because of significant inconsistencies in machinery codes assigned to the 1980-1998 and 1999-2001 data, data for the later years of NTOF are not presented.

Figure 6. Changes in Annual Average Machine-related Fatality Rates by Selected Machine Types for Three Time Periods Between 1980 and 1998\* (Source: NIOSH NTOF)



\*Because of significant inconsistencies in machinery codes assigned to the 1980-1998 and 1999-2001 data, data for the later years of NTOF are not presented.

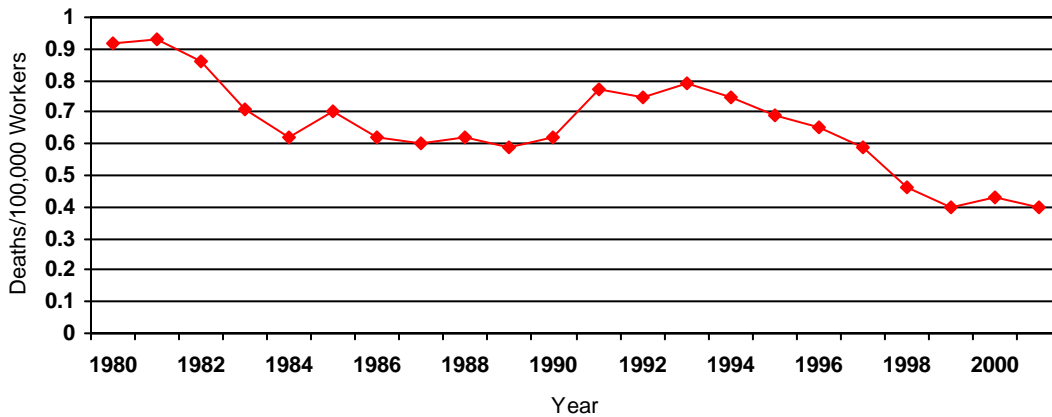


## HOMICIDES

In the late 1980s, NIOSH's NTOF surveillance system identified homicides as a leading cause of work-related injury death in the U.S. This national recognition formed the basis of NIOSH's efforts that began in the early 1990s to address this serious public health problem. The NTOF data have supported and directed further research into the characteristics of homicides and provided an index for tracking improvements.

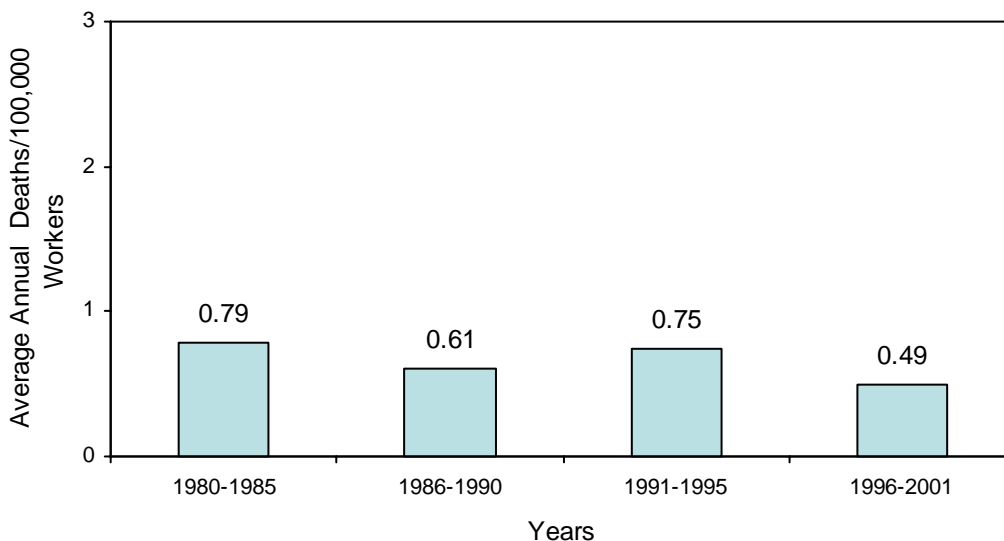
Work-related fatality rates for homicides have decreased 130% from 1980 through 2001 based on data from the NTOF surveillance system (Figure 7). The 6-year average fatality rate for the period after NIOSH began its focus on workplace homicides decreased 37% compared to the rate for the 6-year time period 1980-1985 (Figure 8).

Figure 7. Occupational Fatality Rates for Homicide-related Deaths\*  
(Source: NIOSH NTOF 1980-2001)



\*Data for 2001 exclude deaths associated with September 11.

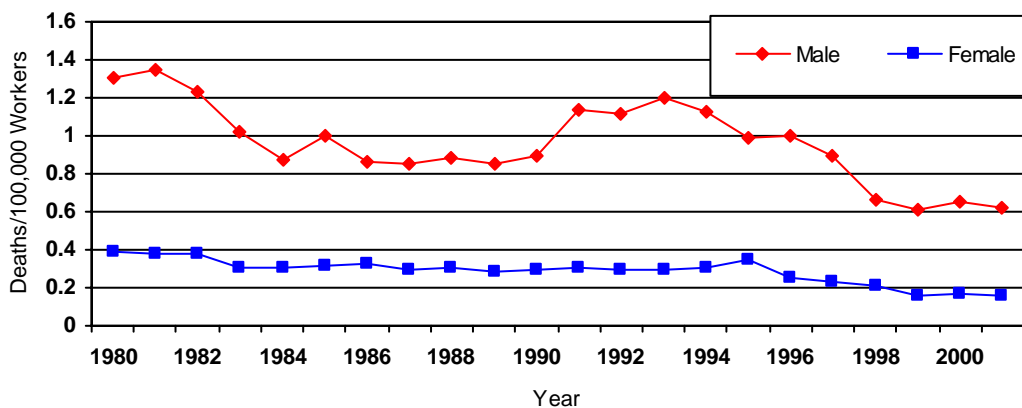
Figure 8. Annual Average Homicide Fatality Rates for Four Time Periods Between 1980 and 2001\* (Source: NIOSH NTOF)



\*Data for 2001 exclude deaths associated with September 11.

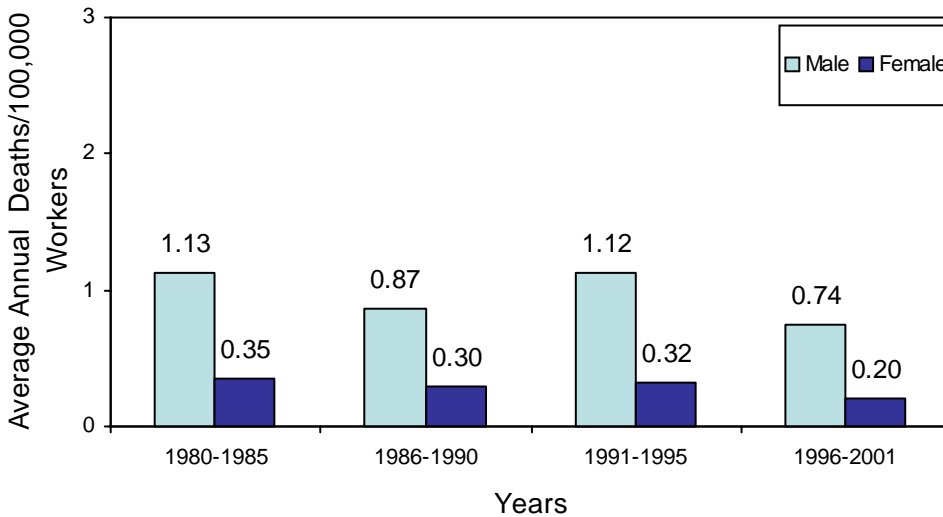
Although the majority of workplace homicides occurred to men, homicides were the leading cause of death among women. Fatality rates for homicides among women decreased 59% from 1980 through 2001 compared to a 53% decrease for men for the same period (Figure 9). The 6-year average fatality rate for the period after NIOSH began its focus on workplace homicides decreased 43% for women and 35% for men compared to the rates for the 6-year time period 1980-1985 (Figure 10).

Figure 9. Occupational Fatality Rates for Homicide-related Deaths by Sex\* (Source: NIOSH NTOF 1980-2001)



\*Data for 2001 exclude deaths associated with September 11.

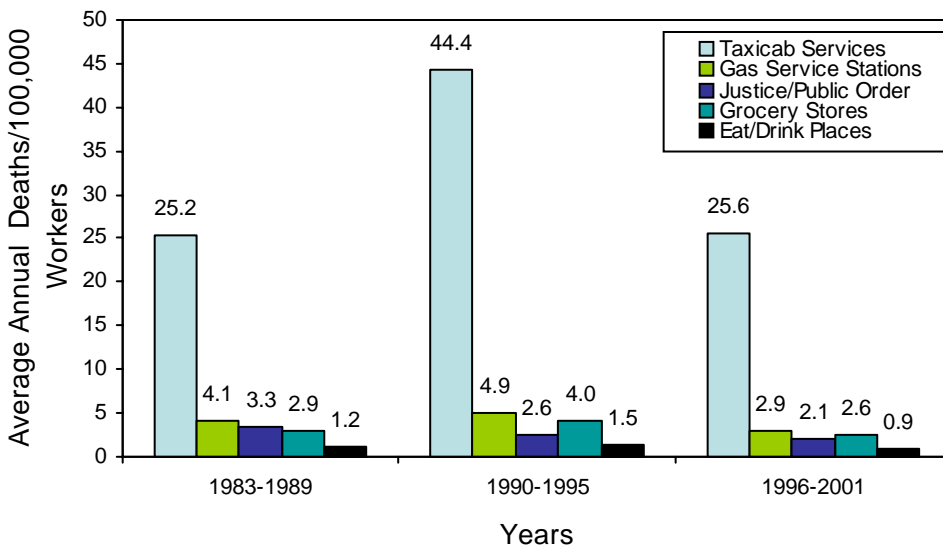
Figure 10. Annual Average Homicide Fatality Rates by Gender for Four Time Periods Between 1980 and 2001 (Source: NIOSH NTOF)



\*Data for 2001 exclude deaths associated with September 11.

NIOSH researchers identified five primary industries as having either a high number of workplace homicides or a high rate of homicides. The number and rate of fatality in all five industries (Taxicab Services, Gas Service Stations, Justice/Public Order Establishments, Grocery Stores, and Eating/Drinking Places) decreased for the period after NIOSH began its focus on work place homicides (Figure 11).

Figure 11. Annual Average Homicide Fatality Rates by Selected Industries for Three Time Periods Between 1983 and 2001\* (Source: NIOSH NTOF)

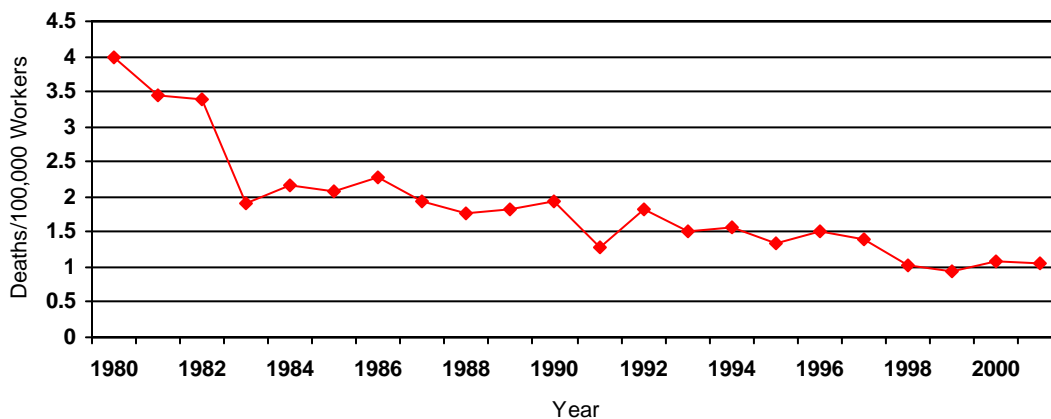


\*Data for 2001 exclude deaths associated with September 11.

## YOUTH

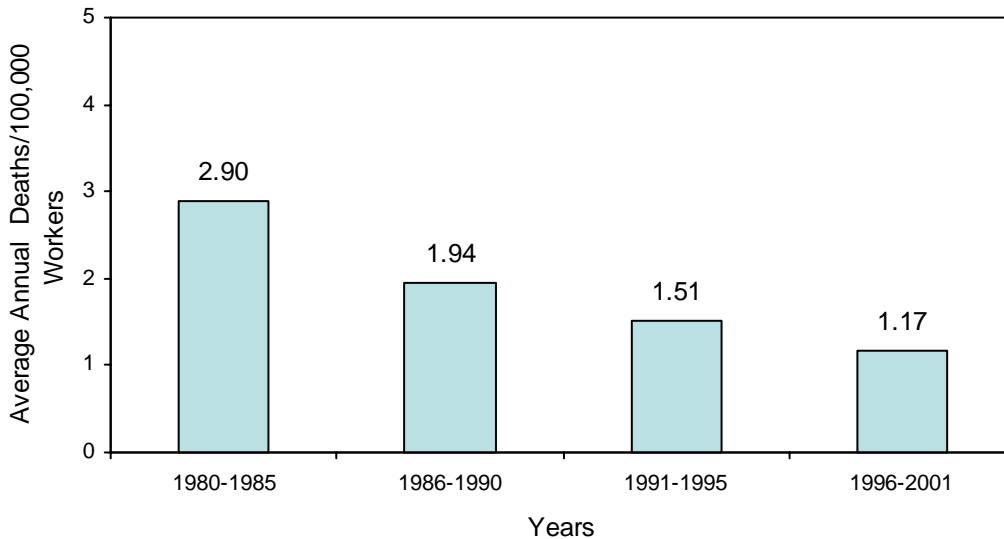
In the early 1990s, NIOSH researchers found that the risk of injury death for workers 16 and 17 was similar to that of adult workers aged 18 and older when comparing rates based on full-time equivalency. Because young workers are less likely to be employed in especially hazardous jobs, this finding raised concern within NIOSH and throughout the occupational safety and health community. NIOSH has worked closely with safety and health officials, researchers and advocacy groups to improve the safety of these young workers. Since 1980, work-related fatality rates for youth aged 16-17 years old have decreased 73% (Figure 12). The average fatality rate for workers aged 16-17 years old for the 6-year period 1996-2001 decreased 60% compared to the rate for the time period 1980-1985 (Figure 13).

Figure 12. Occupational Fatality Rates for Workers Aged 16-17 Years Old\*  
(Source: NIOSH NTOF 1980-2001)



\*Data for 2001 exclude deaths associated with September 11.

Figure 13. Annual Average Fatality Rates for Workers Aged 16-17 Years Old for Four Time Periods Between 1980 and 2001\* (Source: NIOSH NTOF)

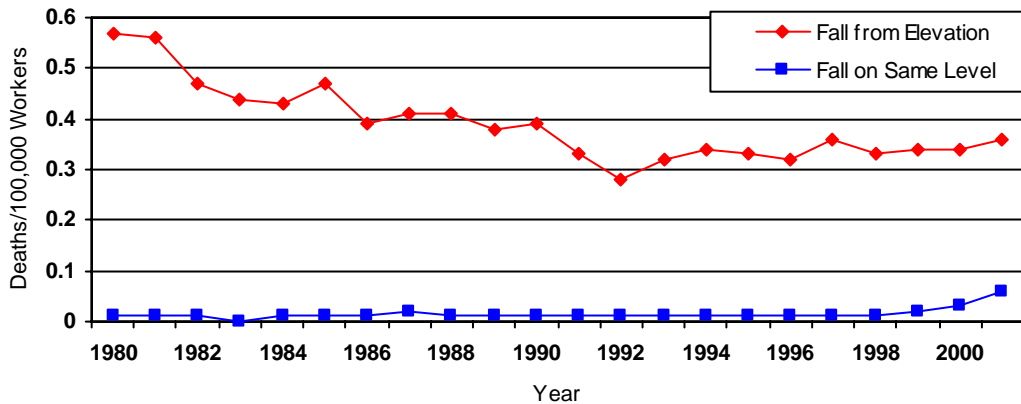


\*Data for 2001 exclude deaths associated with September 11.

### FALLS FROM ELEVATION

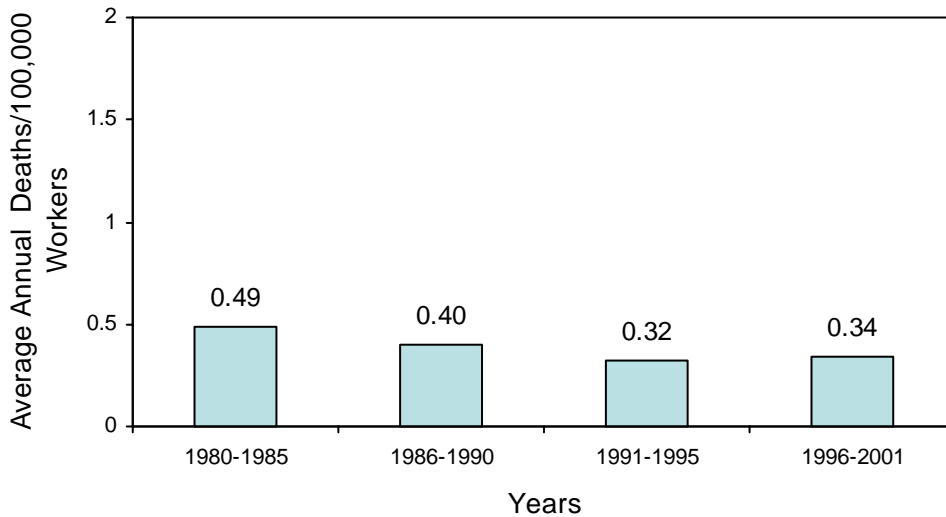
In the late 1980s, through the NTOF surveillance system, NIOSH identified falls as the fourth leading cause of work-related injury death in the U.S. The majority of work-related falls were from an elevation (e.g., ladders, scaffolding, or stairs or steps) (Figure 14). Fatality rates for falls from elevation have decreased 37% from 1980 through 2001 based on data from the NTOF surveillance system (Figure 14). The average fatality rate for falls from elevation for the period 1996-2001 decreased 31% compared to the rate for the time period 1980-1985 (Figure 15).

Figure 14. Occupational Fatality Rates for Fall-related Deaths by Fall Type\* (Source: NIOSH NTOF 1980-2001)



\*Data for 2001 exclude deaths associated with September 11.

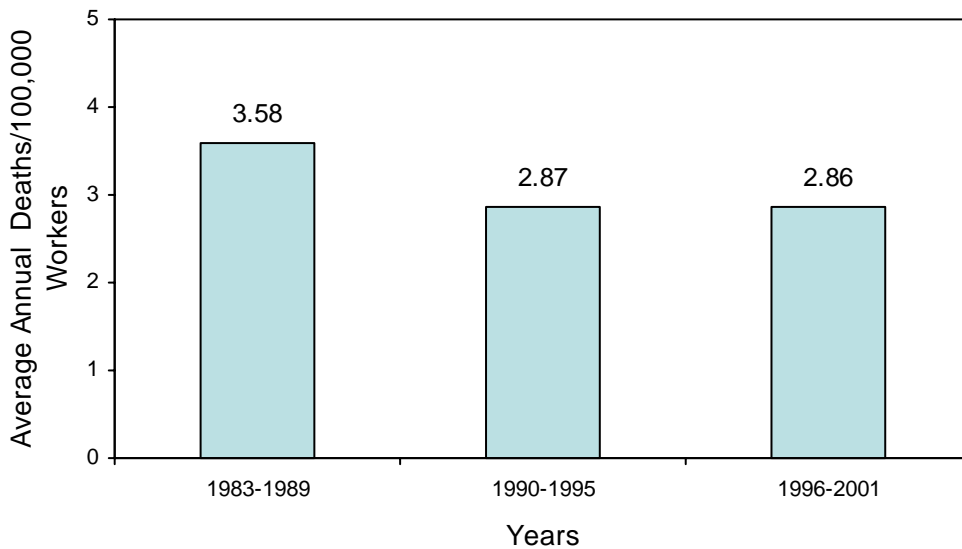
Figure 15. Annual Average Fatality Rates for Falls from Elevation for Four Time Periods Between 1980 and 2001\* (Source: NIOSH NTOF)



\*Data for 2001 exclude deaths associated with September 11.

NIOSH researchers identified workers in construction as having the highest risk of fatal falls from elevation. The rate of fatal falls from elevation in construction has decreased 20% since NIOSH began collecting NTOF data (Figure 16).

Figure 16. Annual Average Fatality Rates for Falls from Elevation by in Construction for Three Time Periods Between 1983 and 2001\* (Source: NIOSH NTOF)



\*Data for 2001 exclude deaths associated with September 11.

**Availability** (*e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.*):

Case-specific data from NTOF are only available to researchers within NIOSH. For NIOSH researchers who do not have direct access or for the general public, aggregated summary data are available upon request and through NIOSH publications, scientific journal articles, and conference presentations. NIOSH is currently finalizing a queryable public-use dataset.

**Restrictions on Access:**

NTOF data are protected by Section 308(d) of the Public Health Service Act. This Act prohibits release of case specific data and requires censoring of small cells. Case-specific data may only be accessed by NIOSH personnel who have an identified need and who have participated in annual confidentiality training and signed a data use agreement.

**Name of Surveillance System or Dataset:** Occupational Injury Surveillance of Production Agriculture (OISPA) and the Minority Occupational Injury Surveillance of Production Agriculture (M-OISPA)

**Owner/Manager/Contact:**

Owner: U.S. Department of Agriculture, National Agricultural Statistics Service (USDA, NASS).

Manager: John Myers, NIOSH, DSR

Contact: John Myers, NIOSH, DSR

**Description/Scope:**

OISPA and M-OISPA are periodic surveys conducted for NIOSH by the U.S. Department of Agriculture, National Agricultural Statistics Service (USDA, NASS) through an interagency agreement. OISPA and M-OISPA provide demographic and occupational injury information for farm operators and injury information for adults 20 years old or older who were directly hired to work on farms. Data is also collected on specific farm hazards such as farm tractors and All Terrain Vehicles. OISPA collects these data using a large probability sample of all farming operators in the U.S., while M-OISPA is based on a probability sample of all minority farm operators in the U.S. OISPA data are available for the years 2001 and 2004. M-OISPA data are available for the year 2003.

**Major Analyses Undertaken:**

The 2001 OISPA survey data have been comprehensively analyzed. Estimates for demographics and injuries have been produced at the national and regional levels. Data from this analysis have been released through a USDA publication (See “Outputs” for citation). Basic analyses of the 2003 M-OISPA and the 2004 OISPA surveys have been conducted. Detailed analyses of these two surveys are ongoing.

Focused analyses of OISPA data have been conducted to look at the changes over time in farm tractor demographics and Roll-Over Protective Structure (ROPS) use on farms; All Terrain Vehicle demographics on U.S. farms; and trends in occupational adult farm injuries over time. These results have or will be released through peer-reviewed journals, and a meeting proceedings (see “Outputs” for citations).

OISPA data has also been used by the external community to look at such topics as tractor use on farms, and the cost benefit of retrofitting ROPS on older tractors (see “Intermediate Outcomes” for details).



**Outputs** (*descriptive report, article, methodology, etc.*):

Results from OISPA analyses have been disseminated at a professional meeting, and through journal articles and a USDA, NASS fact sheet. A list of outputs follows:

Peer reviewed Journal Articles:

Myers JR. [2004]. It's time for change, one way or another. *Journal of Agricultural Safety and Health* 10(1):3-5.

Goldcamp E, Myers J, Hendricks K, Layne L, Helmkamp J. [2006]. Nonfatal All-Terrain Vehicle-Related Injuries to Youths Living on Farms in the United States, 2001. *Journal of Rural Health* 22(4):309-313. (*In press*).

USDA/NIOSH Fact Sheet:

USDA. [2004]. 2001 Adult agricultural–related injuries. Washington, DC: U.S. Department of Agriculture, National Agricultural Statistics Service, Sp Cr 9 (12-04).

Presentation:

Myers JR. [2003]. Tractor occupational safety and health update. In: Record of Tractor- Related Injury and Death Meeting. Pittsburgh, PA, February 13-14, 2003, pp. 5-23. Morgantown, WV: NIOSH.

**Intermediate Outcomes:**

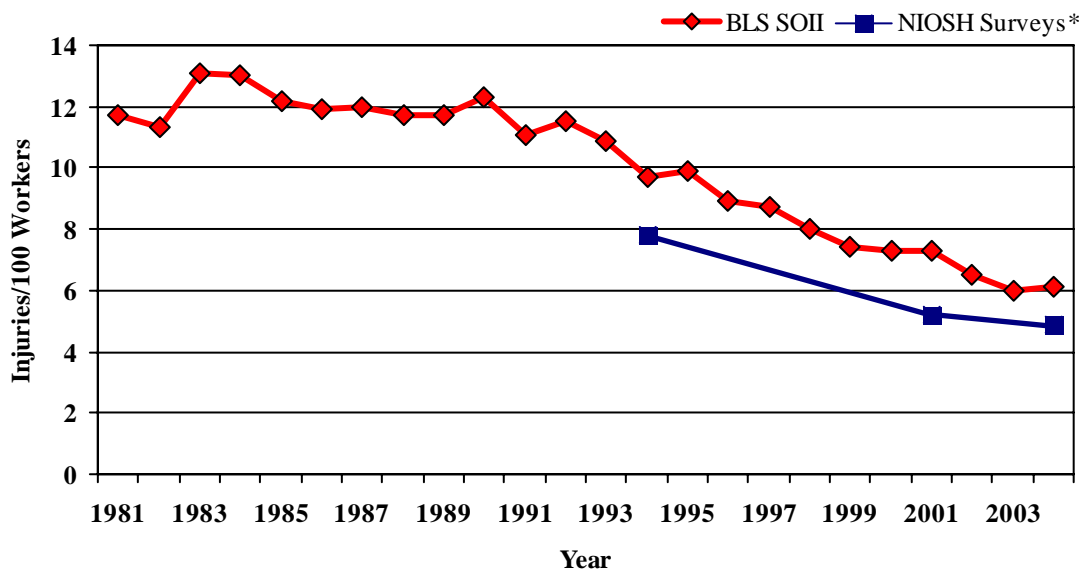
The NIOSH OISPA has led to two intermediate outcomes to date:

1. Tractor data from the 2001 OISPA have been shared with Dr. Barbara Marlenga of the National Farm Medicine Center, Marshfield, Wisconsin. Dr. Marlenga used tractor prevalence data for an ergonomic evaluation of common tractors with and without ROPS for use by youth on farms. Dr. Marlenga's research is being done in collaboration with the NIOSH Agricultural Safety and Health Center located at the University of California-Davis.
2. Dr. Henry Cole at the University of Kentucky also is using OISPA tractor prevalence data from 2001 and 2004 for an economic analysis project of ROPS use on farms. The project includes analysis of tractor and ROPS use by hours worked, farming operation, and the need/feasibility of retrofitting ROPS to existing tractors. This project is part of a larger national NIOSH Agricultural Research Centers' tractor initiative in which NIOSH is also collaborating.

## Outcomes:

OISPA and M-OISPA are components of the NIOSH agricultural initiative begun in 1990. These data have been used by NIOSH and stakeholders to guide research and prevention efforts, and track progress over time, using comparable data for the years 1993-1995 collected in an earlier NIOSH survey, the Traumatic Injury Surveillance of Farmers (TISF).

1. NIOSH nonfatal injury data collected in the Traumatic Injury Surveillance of Farmers (TISF) and the Occupational Injury Surveillance of Production Agriculture (OISPA) programs indicate that lost-time occupational injuries on farms decreased between the time period 1993-1995 and 2004. This decrease is corroborated by independent injury surveillance data maintained by the Bureau of Labor Statistics covering the same time period (*Figure 1*).



*Figure 1. Injury Rates per 100 Workers, 1980-2004 for the Production Agriculture Industry (Source: BLS Survey of Occupational Injuries and Illnesses, NIOSH Traumatic Injury Surveillance of Farmers, and Occupational Injury Surveillance of Production Agriculture).*

2. Roll-Over Protective Structures (ROPS) are special structures attached to farm tractors to prevent the tractor from crushing the operator during an overturn. ROPS represent the best method of preventing tractor overturn-related deaths on farms. The percentage of farm tractors used on U.S. farms fitted with a ROPS increased from 38% in 1993 up to 50% in 2001 (*Source: NIOSH Traumatic Injury Surveillance of Farmers, and Occupational Injury Surveillance of Production Agriculture*).

**Availability** (*e.g., raw data or summary data; Web access, electronic access, hardcopy access; etc.*):

A hardcopy of the 2001 OISPA will be available in 2007. A hard copy of the 2003 M-OISPA and 2004 OISPA will be available in 2008. Special data requests are available through USDA, NASS and NIOSH.

Electronic versions of the data are available from USDA, NASS (see “Restrictions on Access”). NIOSH is working with a contractor to make these data available via the web.

**Restrictions on Access:**

Under the terms of the interagency agreement between NIOSH and USDA, NASS, ownership of the OISPA and M-OISPA are retained by USDA, NASS. Access to electronic versions of these data requires users to apply to USDA, NASS for access. Approved users must agree to follow USDA, NASS data release requirements and to return data to USDA, NASS at the end of the project for which the use was granted. Special data runs are also available to users through USDA, NASS, following a similar application process.