

# **KENTUCKY FACE\* PROJECT**

## **ANNUAL REPORT**

**2000**



**KENTUCKY INJURY PREVENTION AND RESEARCH CENTER**

**\*Fatality Assessment and Control Evaluation**  
Cooperative Agreement Number U60/CCU409879-07/08



The Kentucky Fatality Assessment and Control Evaluation (KY FACE) Project is an occupational fatality surveillance project of the Kentucky Injury Prevention and Research Center (KIPRC)\*. Its primary purposes are to gather data on work-related fatalities and to develop prevention strategies, which are disseminated to employers, workers, agencies with interests in public health, and others who may be in a position to effect change.

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\*Organizationally, KIPRC is part of the University of Kentucky School of Public Health. It maintains a contractual relationship with the Kentucky Department for Public Health (KDPH). Funding for the KY FACE Project is from a cooperative agreement between the National Institute for Occupational Safety and Health

(NIOSH) and KDPH that is subsequently contracted to KIPRC.

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## EXECUTIVE SUMMARY

During 2000, KY FACE staff identified and recorded 124 occupational fatalities. The categories designated by NIOSH as eligible for field investigation during this period were youth workers (<18 years old), highway work zones, and machinery-related incidents. Logging was also chosen by KY FACE staff as an area of concern.

In addition to investigative and data management activities, following are some of the notable accomplishments of the KY FACE Project during its seventh year:

- Poster displays at the National Occupational Injury Research Symposium (NOIRS) that was held in Pittsburgh in October 2000. These included:
  - "Experiences of Widows Following a Farm-related Fatality" Amy Scheerer, MSPH and Vickie Brandt, BS, RN
  - "ICD-9-CM vs. ICD-10 for Coding Occupational Fatalities: Is ICD-10 Better, Worse, or Just Different?" Mike Pope, DVM and Amy Scheerer, MSPH
  - "Fatal Incidents Involving Farm Equipment on Public Roadways" Donna Reed, BS and Tim Struttman, MSPH
- Poster display at the 5<sup>th</sup> World Conference on Injury Prevention and Control held in New Delhi, India in March 2000:
  - "Describing Occupational Fatalities Using Linked Data Sets" Tim Struttman, MSPH, Susan Wojcik, MS and Donna Reed, BS
- Oral presentation, KY Coroners' Annual Conference, Louisville, KY, April 2000 (sixth consecutive year).
- Oral presentation, Governor's Safety and Health Conference, Louisville, KY, May 2000.
- Publication, Struttman TW, Scheerer A. (2001). Fatal injuries caused by logs rolling off trucks: Kentucky 1994-1998. *American Journal of Industrial Medicine*. 39:203-208
- Occupational fatalities can now be mapped on the KIPRC website (<http://www.kiprc.uky.edu/dcerts.html>).

## PROGRESS TOWARD PROGRAM OBJECTIVES

Following are some of the goals that were set by KY FACE staff at the beginning of 2000, and, for each, a brief evaluation of progress made:

**Objective 1)** Continue working with the Kentucky Department of Labor, coroners, State Police, and other agencies to ensure that a minimum of occupational fatalities go unreported.

Frequent comparisons of findings with the Kentucky Department of Labor help to ensure that KY FACE misses no cases. Occasionally, KY FACE even reveals previously unknown cases to the Department of Labor. Also, frequent contact is made with county coroners to confirm or reject possible cases.

**Objective 2)** Complete First Reports and Supplements (when appropriate) on all occupational fatalities and transmit data to NIOSH in an accurate and timely fashion.

First reports and supplements, as well as data transmission to NIOSH, have been completed in an accurate and timely fashion. NIOSH has, however, during much of the year, been working on developing new software using Microsoft Access to enter and transmit data. The new software should allow easier access to and comparison of data among states. We have spent much of our time entering a backlog of cases into the new software (first edition) and working with NIOSH attempting to work out/around “bugs” of the second edition. We also tried the new Epi-Info 2000 software (Microsoft Access based as well), hoping that it would make data analysis more “user-friendly” than the older DOS version of Epi-Info, but have found it to be more problematic than the earlier version.

**Objective 3)** Complete at least 18 on-site investigations of occupational fatalities in designated categories during 2000.

Due to staff changes, position vacancies, time constraints, and the nature of the occupational fatalities occurring in Kentucky during this year, we investigated only 3 cases. These included a logging, a machine-related, and a youth case. Attempts were made for 2 other machinery cases, but one declined and the other failed to return several communication attempts. Also, many of the cases that were in scope for investigation were mining related (and therefore investigated by the Mine Safety and Health Administration). In addition to the new software (see objective 2), much time was also spent on articles and presentations (see objectives 5,6,7). We plan to investigate any future occupational fatalities (non-mining) within scope.

**Objective 4)** Continue to develop and expand dissemination methods to communicate FACE results, program activities, goals, and priorities.

A 43 page annual report was developed summarizing Kentucky’s 1999 occupational fatality data. More than 50 copies were disseminated to various federal, state, and county agencies, and to others associated with education and research.

FACE staff (and others) responded to 49 requests for FACE data, which, again, is slightly more than the previous year (42), indicating continued and increasing awareness of the existence of KY FACE and interest in the project's results.

Tim Struttman taught an Agriculture Safety class at the University of Kentucky which relied heavily on and presented KY FACE data acquired over the years.

The Community Partners for Healthy Farming Project has continued to use KY FACE data in the development of agricultural safety information, particularly messages designed to increase farmers retrofitting their tractors with rollover protective structures.

"Fatal Injuries Due to Logs Rolling Off Trucks at Sawmills" was published in the "Fall 2000" issue of "The Kentucky LogJam" distributed by the Kentucky Forest Industry Association. This was a "Hazard Alert" addressing the problem indicated in the title. The alert briefly described seven cases of fatal injury in Kentucky and gave recommendations for prevention. The Kentucky LogJam Newsletter is sent to all 4,500 graduates of the Kentucky Master Logger program representing all of the timber harvesting operations in the state. These operators harvest approximately 1 billion board feet of timber annually on 111,000 acres of forestland. The Kentucky LogJam is also sent to all offices of the Kentucky Division of Water, all 9 district offices of the Kentucky Division of Forestry, and the 120 County Cooperative Extension Offices in Kentucky. It is also sent to the home office of the Kentucky Forest Industries Association for distribution to their member mills in Kentucky. Regionally it is sent to Logger Training and Education Specialists in the Midwest and Southeast.

Two posters (see Objective 5) were placed in the display case at the University of Kentucky Medical Center Library for two weeks:

"Experiences of Widows Following a Farm-related Fatality" Amy Scheerer, MSPH and Vickie Brandt, BS, RN

"Fatal Incidents Involving Farm Equipment on Public Roadways" Donna Reed, BS and Tim Struttman, MSPH

A new FACE brochure was developed and sent to all 120 County Coroners offices along with a FACE Facts newsletter describing 1999 data and laminated guideline sheets for determining if a death was work related.

A one page "flyer" was developed and distributed to 120 County Extension Agents soliciting their help in promoting the retrofit and/or use of Rollover Protective Structures (ROPS) and seat belts on tractors. The same "flyer" was also modified to target farmers and was distributed at a farm safety day.

**Objective 5)** Submit abstracts to professional meetings and publish results.

Abstracts for poster presentations were submitted, accepted, and presented at the National Occupational Injury Research Symposium (NOIRS) that was held in Pittsburgh in October 2000.

These included:

"Experiences of Widows Following a Farm-related Fatality" Amy Scheerer, MSPH and Vickie Brandt, BS, RN

"ICD-9-CM vs. ICD-10 for Coding Occupational Fatalities: Is ICD-10 Better, Worse, or Just Different?" Mike Pope, DVM and Amy Scheerer, MSPH

"Fatal Incidents Involving Farm Equipment on Public Roadways" Donna Reed, BS and Tim Struttman, MSPH

Abstract for poster presentation was submitted, accepted and presented at the 5<sup>th</sup> World Conference on Injury Prevention and Control held in New Delhi, India in March 2000:

"Describing Occupational Fatalities Using Linked Data Sets" Tim Struttman, MSPH, Susan Wojcik, MS and Donna Reed, BS

Oral presentations were made at the annual Kentucky Coroner's Conference in April of 2000 and the Governor's Safety and Health Conference (Kentucky) in May of 2000.

**Objective 6)** Write article based on occupational fatality data in Kentucky to be submitted to peer-reviewed journal (CFOI vs. FACE analysis, data linkage project).

While this *specific* objective was not met, it still remains an area of interest and, therefore, has been carried over for the next year with modifications (FACE and FARS data linkage).

Four other articles related to FACE data, however, were written/accepted/published (or are in press) and are as follows:

Struttman TW, Brandt VA, Morgan SE, Piercy LR, Cole HP. Equipment dealers' perceptions of a community based ROPS campaign. *Journal of Rural Health* (Spring 2001)

Struttman TW, Scheerer A. (2001). Fatal injuries caused by logs rolling off trucks: Kentucky 1994-1998. *American Journal of Industrial Medicine*. 39:203-208

Brandt VA, Struttman TW, Cole HP, Piercy LR. Delivering health and safety education messages for part-time farmers through local businesses and employers. *Journal of Agromedicine* (in press)

Amy Scheerer also submitted an article for publication (see Objective 8 below).

**Objective 7)** Hire and train a new Field Investigator.

We received and reviewed several applications and conducted interviews, but, due to funding issues, our search was halted and Tim Struttman's commitment was increased to fill in the gaps created by this open position. We will resume searching for a FACE Field Investigator in the next year. Both Mike Pope and the new Field Investigator will attend NIOSH investigator training in Morgantown when offered.

*Objective 8*) Finish qualitative analysis of survivors interviews and publish data.

This has been completed and an article has been submitted and accepted:

Scheerer A, Brandt V. Interviews with widows following fatal farming incidents. *Journal of Agricultural Safety and Health* (in press)

## SURVEILLANCE PROGRAM

During 2000 the KY FACE Project continued to develop and expand its network of notification sources while maintaining the relationships formed in its prior years of operation. The following is a list of currently active sources:

- County coroners and deputy coroners
- Kentucky Department of Labor
- Kentucky Labor Cabinet, Occupational Safety and Health (OSH)
- Community Partners for Healthy Farming (CPHF) Project
- State Vital Statistics Registrar
- Emergency Medical Services offices
- Southeast Center for Agricultural Health and Injury Prevention (SCAHIP)
- Kentucky State Police, Fatal Accident Reporting System (FARS)
- County Cooperative Extension offices
- Mining Safety and Health Administration (MSHA)
- Print and electronic media news reports

## INVESTIGATION PROGRAM

The KY FACE Project continues to conduct on-site investigations of selected occupational fatalities which fall into the NIOSH-designated categories of machinery related incidents, highway work zones and youth workers (<18 years), as well as logging incidents which were designated as a target area by Kentucky.

Cases investigated for 2000 include a logging incident (Appendix A), a construction incident, and a youth incident involving a golf cart. Summaries of these incidents are as follows:

- A 73-year-old male self-employed logger (the victim) was killed when he presumably was struck on the head by a branch of a falling tree. He and his son, the only other logger on site, had finished a break and had been working approximately 30 minutes when the incident occurred. The son was operating a skidder attached to the base of a tree that had been cut, but was still standing, nearly vertical, hung in the fork of another tree. He was pulling the base away from the stump so that the tree would fall to the ground. The father was watching, waiting for the tree to come down so that he could begin trimming away the branches. After the tree hit the ground, the son got off of the skidder intending to help his father trim the branches, but he didn't see his father. Searching the site, he found his father unresponsive, slumped forward on his knees, in the branches of the fallen tree. Since there were no telephones on site, the son took a van that they had parked in a clearing nearby to call for help. As he was driving through a pasture toward the landowners house, he came upon the landowner who was loading cattle and asked him to go to the house to call 911 so that he could return to the scene. Upon returning to his father, the son had to cut away some branches in order to reach him. He moved his father

out from under the branches and held him in his lap, waiting for help to arrive. Emergency medical services (EMS) were dispatched to the scene after receiving the call at 7:40 a.m., and arrived at 8:00 a.m. One of the EMS workers, also being a coroner, pronounced the victim dead at the scene, immediately upon their arrival.

- A 44-year-old construction worker (the victim) was killed when an approximately 1000 pound bucket, for an unknown reason, detached and fell from an excavator, landing on him as he was working in a trench. The victim and another worker had been in the trench preparing it for a pre-formed concrete manhole that they were about to install. Their supervisor sat and waited in the excavator, with the engine running, and the bucket raised a few feet above ground level so that it would be out of the way. The second man in the trench had just turned away from the victim when he heard a “click” and turned back to see the bucket fall. He attempted to move the bucket, but could not. He and the excavator operator used the excavator and a chain to remove the bucket and then called for help. The victim was, however, pronounced dead at the scene upon arrival of emergency medical workers.
- A fifteen-year-old golf course worker (the victim) was killed when the utility golf cart he was operating overturned. The victim was employed by the golf club on which he and his family resided and had driven the golf cart to his home, which is at the top of a hill, to change clothes. Before leaving his residence, he phoned a friend who then came to his house on a regular course golf cart (not a utility cart). They left the victim’s home, each driving separate carts, via golf course roadway, traveling downhill towards the clubhouse. As they descended the hill, they were reportedly racing when the victim lost control of his cart which left the roadway, struck a pile of dirt, became airborne across a small creek, rotated in the air, and landed on his head on the opposite side of the creek. EMS was summoned and CPR was initiated, but efforts to revive him failed and he was pronounced dead in the ambulance, while still on the scene.

## PREVENTION/INTERVENTION ACTIVITIES

Upon completion of each investigation report (example, Appendix A), copies were provided to the employer, if applicable, to the coroner involved, and to any witnesses or others who assisted with the investigation. These reports are also available to others (*e.g.*, presentation audiences) via a request form or the KIPRC website. A sample form is included as Appendix B.

FACE Hazard Alerts, newsletters and other NIOSH handouts were distributed at statewide conferences and meetings (reaching many target audiences, including safety and health professionals, coroners, emergency medical service personnel, and the agricultural community). In addition, prevention materials were periodically distributed to the state's 120 county extension agents, postage free, through the UK Department of Agriculture, which distributes packets weekly to all agents.

FACE staff members made oral presentations during 2000 to the State Coroners' Association and the Governor's Safety and Health Conference. An evaluation of one of the presentations is included as Appendix C. These presentations served to expand our network of notification sources and also increased the number of requests for FACE data

KY FACE also made an oral presentation in September at the annual FACE meeting in Morgantown, WV, about the Roll Over Protective Structure (ROPS) campaign that was done in KY. At the time of the presentation the prevention materials that were developed, field tested, and revised were available in notebook form. They have since been made available on CD. The primary focus is retrofitting ROPS and safe tractor operation. These are 'ready to use' materials and include PSAs, exercises, simulations, motor vehicle crash prevention materials, and others. They were designed to be used by local community groups, including health educators and injury prevention coordinators. The CD contains all materials in both Microsoft Word format and PDF format. Copies of the CD are available at no cost by contacting KIPRC at (859) 257-4955, or [mpope2@pop.uky.edu](mailto:mpope2@pop.uky.edu).

The educational module developed and initiated in 1995 for coroners and deputy coroners was continued. This is an on-going project related to accurate completion of death certificates with respect to work-relatedness.

**QUANTITATIVE ANALYSIS**

Kentucky FACE identified 124 fatal occupational injuries during 2000. The following section provides a descriptive analysis of the KY FACE data for that year.

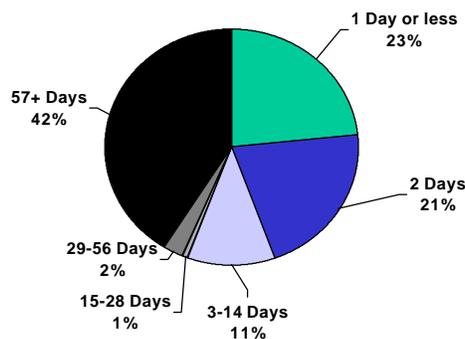
*Notification of Cases*

Newspapers were the most common source of initial notification (Table 1). FACE was informed of 44 percent of the cases within two days (Figure 1), compared to 58 percent in 1999. After a case was identified, other sources were used to gather additional details about the fatal incident, including death certificates, coroners, employers, law enforcement officers, Mining Safety and Health Administration (MSHA) reports, autopsy and toxicology reports, and interviews with witnesses and family members during investigations.

**Table 1. Initial Sources of Notification**

Source	Percent of Cases
Newspapers	49%
Vital Statistics	24%
KY State Police Fatal Accident Reporting System (FARS)	5%
Coroners	4%
Kentucky Department of Labor	14%
Community Partners for Healthy Farming	1%
Medical Examiner	1%
MSHA	1%
NIOSH	1%

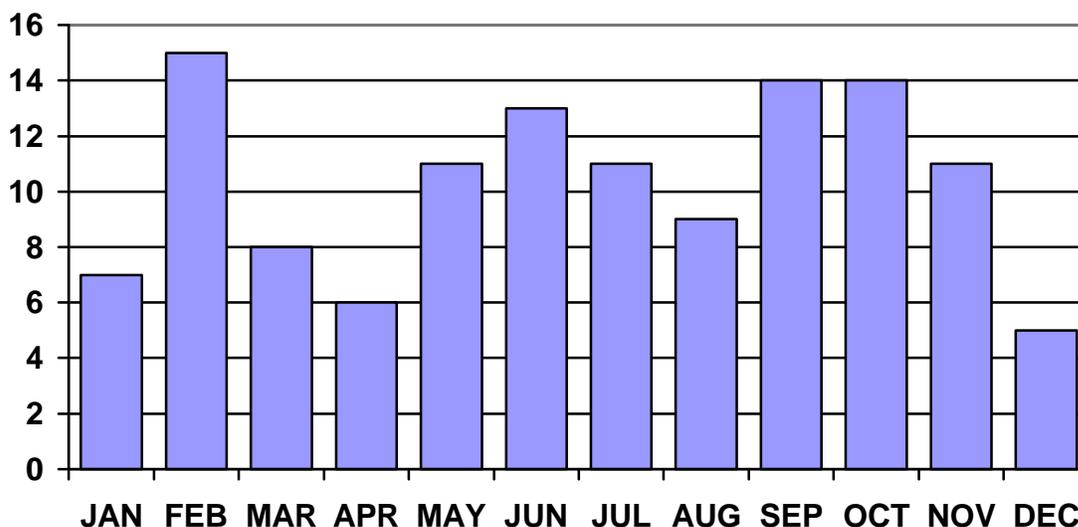
**Figure 1. Initial Notification Times**



*When and Where*

Figure 2 shows the number of fatalities that occurred each month during the year. While it had the fewest in 1999, the peak month for fatalities in 2000 was February (n=15). This is at least partially due to two multiple fatality incidents – one that killed four people (plane crash) and one that killed two (explosion). Following closely behind February were September and October (n=14). December had the fewest occupational fatalities during 2000 (n=5).

**Figure 2. Fatalities Per Month**





Sixty-three of Kentucky's 120 counties had at least one occupational fatality during 2000. Jefferson County had the most fatalities with sixteen, followed by Pike county with seven, Christian and Pulaski counties with five each, and Harrison, Kenton and Martin counties with four each. Table 2 shows the fatality rate per 100,000 workers for each of these seven counties using employment estimates. It is interesting to note that while Jefferson County had four times as many fatalities as Martin County, the rate per 100,000 workers in Martin was almost thirty-six times that of Jefferson. This is due to the relatively high number of employed persons in Jefferson County (368,324) as compared to Martin (2,719). A map of Kentucky's fatalities by county for the five-year period 1996-2000 can be found in appendix D.

**Table 2. Fatality Rates for Counties with the Greatest Frequency of Occupational Fatalities During 2000**

County	Fatalities	Rate per 100,000 workers*
Jefferson	16	4
Pike	7	27
Christian	5	18
Pulaski	5	20
Harrison	4	55
Kenton	4	5
Martin	4	147
Total KY	124	7

\*County employment estimates from the 2000 Kentucky Deskbook of Economic Statistics, Kentucky Cabinet for Economic Development, Division of Research; Frankfort, KY; 2000.

Fatality rates were calculated for all counties experiencing a fatality in 2000 and are listed in Table 3. Forty-six of Kentucky's counties had fatality rates that exceeded the state average of seven per 100,000 workers. Fatality rates were much higher than Kentucky's average in several counties, including Martin (147), Harrison (55), Bracken (51), and Morgan (43) counties. The relatively low number of workers in each of these counties (Martin – 2,719, Harrison – 7,250, Bracken – 3,897, and Morgan – 4,692) led to the high fatality rates, while, on the other hand, Jefferson County, with four to eight times the number of fatalities, only had a fatality rate of four due to its massive workforce (368,324 employed persons).

Table 3. Fatality Rates\* for Counties Experiencing a Fatality in 2000

<i>County</i>	<i>Fatality Rate</i>	<i>County</i>	<i>Fatality Rate</i>	<i>County</i>	<i>Fatality Rate</i>
Martin	147	Russell	19	Lincoln	9
Harrison	55	Christian	18	Laurel	9
Bracken	51	Estill	18	Muhlenberg	9
Morgan	43	Trigg	17	Floyd	8
Webster	39	Fleming	17	Woodford	7
Cumberland	37	Rockcastle	17	Warren	6
Harlan	37	McCreary	17	Clark	6
Wolfe	33	Jessamine	14	Graves	6
Lyon	31	Marshall	14	Scott	6
Adair	29	Breckinridge	14	Shelby	6
Letcher	27	Henry	14	Barren	6
Pike	27	Henderson	13	Kenton	5
Hancock	26	Greenup	13	Boone	5
Boyle	26	Simpson	12	Jefferson	4
McLean	22	Franklin	12	Daviess	4
Whitley	22	Mason	12	Oldham	4
Edmonson	21	Bell	11	McCracken	3
Monroe	20	Grant	10	Bullitt	3
Pulaski	20	Anderson	10	Hardin	3
Lawrence	20	Bourbon	10	Campbell	2
Todd	19	Mercer	9	Fayette	1

\* Rates were calculated per 100,000 workers using county employment estimates from the 2000 Kentucky Deskbook of Economic Statistics, Kentucky Cabinet for Economic Development, Division of Research; Frankfort, KY; 2000.

### *Demographics*

Demographic characteristics of the workers fatally injured on the job are shown in Table 4. Those killed on the job in 2000 were primarily white (83%; 7% were unknown) and male (97%). Ages ranged from 15 through 93 (one age was unknown), with a median of 44. Most (66%) were married, and at least half had a high school education or beyond (50% of known; there were 29% unknown education levels). During 1999, farmers accounted for 75 percent of those aged 60 and over (n=12), but for 2000, they accounted for only forty percent of these fatalities (n=8). The oldest, at 93 years old, was, however, a farmer. While there were four occupational fatalities in the less than 20 age group, only one fell into the newly designated NIOSH target area of youth (<18 years old).

Table 4. Demographic Characteristics, 2000

Characteristic	Number	Percent
Total Fatalities	124	100
Sex		
Male	120	97
Female	4	3
Race		
White	103	83
Black	11	9
Other	1	1
Unknown	9	7
Age		
<20	4	3
20 - 29	12	10
30 - 39	33	27
40 - 49	27	22
50 - 59	27	22
60 - 69	11	9
70 - 79	5	4
80-89	3	2
>80	1	<1
Unknown	1	<1
Marital Status		
Never married	15	12
Married	82	66
Divorced	18	15
Widowed	2	<1
Unknown	7	6
Education		
Less than high school	26	21
High school graduate	41	33
Some college	13	11
College graduate	8	6
Unknown	36	29

### *Industry*

Table 5 and Figure 4 show the number of workers killed in each industry division (as classified by the *Standard Industrial Classification Manual*), as well as a comparison of state and national rates. This year, the division of Transportation/Communication/Public Utilities made up the largest portion (19%, n=24) of work-related deaths in Kentucky. Most (16) of these fatalities, as one might expect, were motor vehicle related. The next highest percentage (17%, n=21) of fatalities occurred in the Construction industry, pushing Kentucky's 2000 fatality rate for Construction 30 percent higher than the U.S. rate. The KY Construction rate was the same as the U.S. rate in 1999. The KY Mining fatality rate saw a huge increase for 2000, making it more than two times that of the U.S. rate. The other significant change worth noting is that the Agriculture/Forestry/Fishing industry, which is usually the leading KY industry for occupational fatalities, is third for 2000, with 17 (down from 21 last year). While these fatalities ranked third in number, the Agriculture/Forestry/Fishing industry's fatality rate in KY was still the second highest (39/100,000 workers). It should be noted, however, that the fatality rate for this industry division is somewhat artificially inflated because employment estimates for farmers include only those who farm full-time. Since many of Kentucky's farmers have other jobs and farm only part-time, the number of those working in the agriculture industry is underestimated, and therefore, inflates the fatality rate for this division.

Kentucky's most dangerous industry in which to be employed during 2000 was the mining industry. Mining's 14 fatalities shot its fatality rate up to 55/100,000 workers more than twice that of the U.S. rate for this industry

Table 5 includes the percentage of workers in each industry division for comparison with the percentage of fatalities in each division. This comparison again illustrates the high risk of working in the mining industry, as this division is comprised of less than two percent of the workers in Kentucky, yet accounts for eleven percent of the occupational fatalities.

**Table 5. Occupational Fatalities by Industry, 2000 (Rates calculated per 100,000 workers<sup>a</sup>)**

Industry <sup>b</sup>	Number of Fatalities (%)	Percent of Employment <sup>c</sup>	2000 KY Rate	1999 KY Rate	1998 KY Rate	US Rate <sup>d</sup>
TCPU*	24 (19)	6.3	21	20	20	13
Construction	21 (17)	6.3	18	14	18	14
Ag/Forest/Fishing	17 (14)	2.4	39	50	54	23
Manufacturing	16 (13)	16.7	5	6	5	4
Services	15 (12)	21.7	4	2	2	2
Mining	14 (11)	1.4	55	38	34	25
Retail/Whse Trade	7 (6)	20.7	2	2	3	3
Public Administration	6 (5)	13.7	2	6	2	3
Finance/Ins/Real Estate	4 (3)	4.6	5	1	0	1
<b>Totals</b>	<b>124 (100)</b>	<b>93.8</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>5</b>

<sup>a</sup> Percent distribution of employed persons obtained from 1) 2000 from *Geographic Profile of Employment and Unemployment, 1998 (Bulletin 2524)*. US Department of Labor, Bureau of Labor Statistics; November 1999; 2) 1999 from *Geographic Profile of Employment and Unemployment, 1997 (Bulletin 2515)*. US Department of Labor, Bureau of Labor Statistics; June 1999; 3) 1998 from *Geographic Profile of Employment and Unemployment, 1996 (Bulletin 2498)*. US Department of Labor, Bureau of Labor Statistics; April 1998.

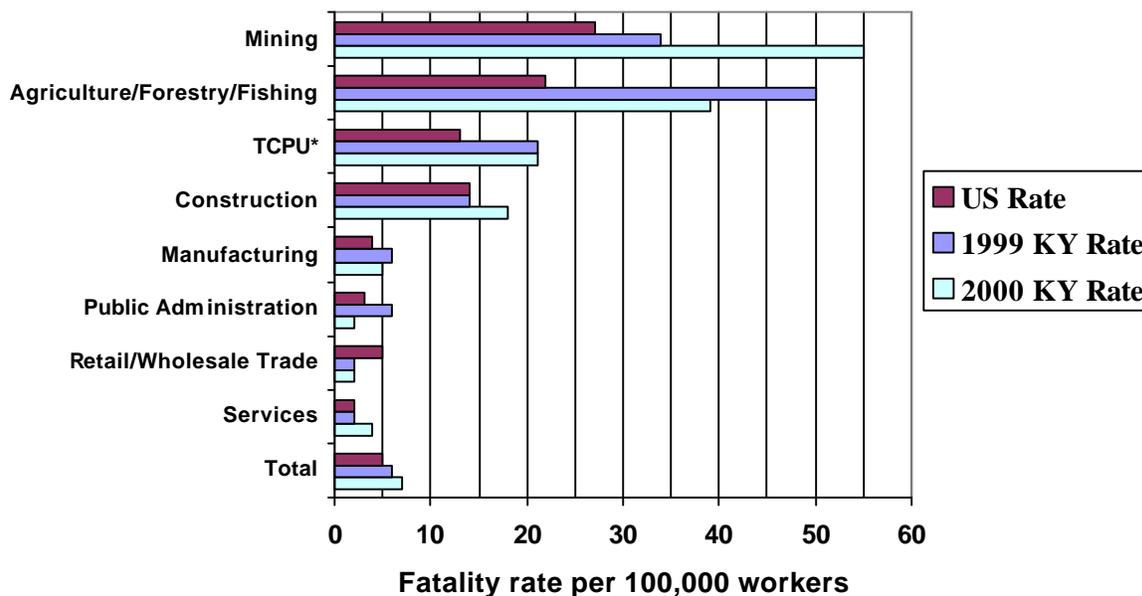
<sup>b</sup>Office of Management and Budget. *Standard Industrial Classification Manual*. 1987. Springfield VA: National Technical Information Service. (NTIS No. PB 87-100012)

<sup>c</sup>The industries listed do not equal 100 percent of employed persons because of rounding and because they do not include private household workers, and self-employed and unpaid family workers which make up the remainder of employed persons (6 percent).

<sup>d</sup>*Fatal Workplace Injuries in 1997: A Collection of Data and Analysis (Report 934)*. US Department of Labor, Bureau of Labor Statistics, National Census of Fatal Occupational Injuries (CFOI), July 1999.

\*Transportation/Communications/Public Utilities

**Figure 4. Occupational Fatality Rates by Industry <sup>a</sup>**



\*Transportation/Communication/Public Utilities

<sup>a</sup>Percent distribution of employed persons obtained from *Geographic Profile of Employment and Unemployment, 1997 (Bulletin 2515)*. US Department of Labor, Bureau of Labor Statistics; June 1999.

Figures 5-14 show the external cause(s) of death for work-related fatalities by industry. Out of the ten industry divisions, motor vehicle crashes (MVCs) were the leading or second leading cause of death in all but three. Firearms and machinery were also causes of death in most industries. Air transport, the second most common external cause of death for 1999, was not as common in 2000, although a single incident was responsible for all four Finance/Insurance/Real Estate fatalities.

Figure 5

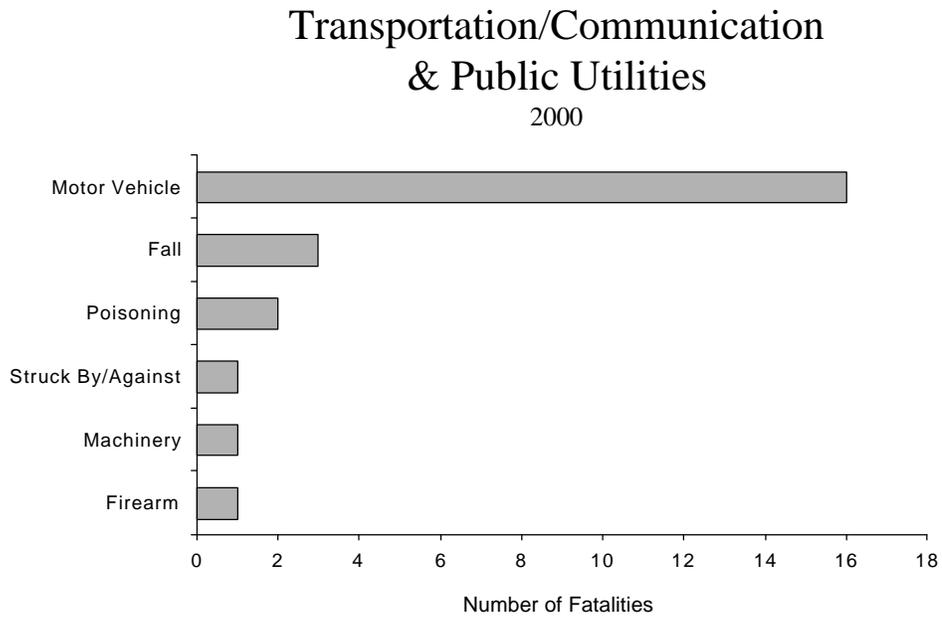


Figure 6



Figure 7

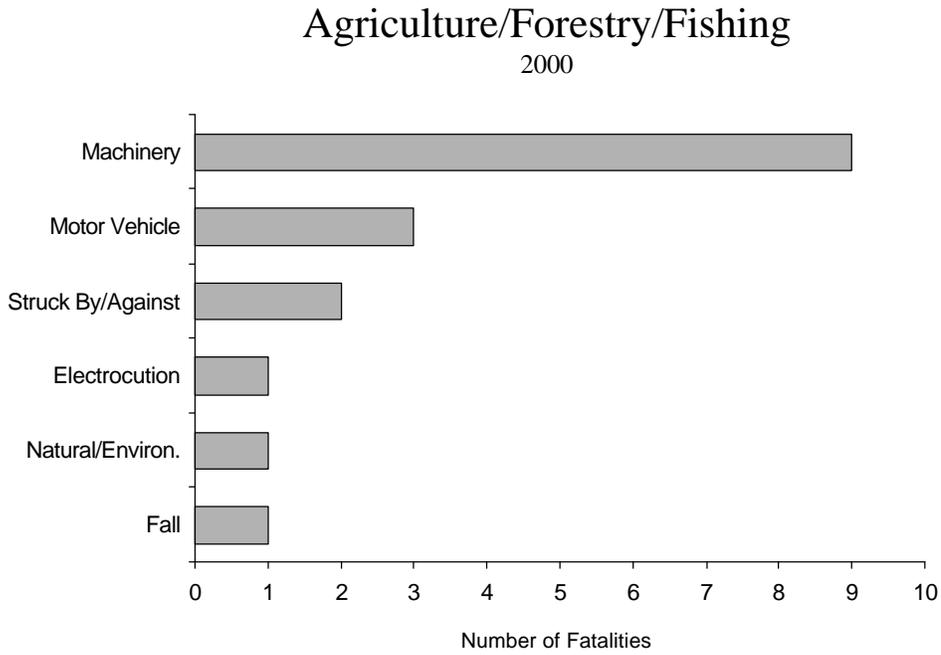


Figure 8

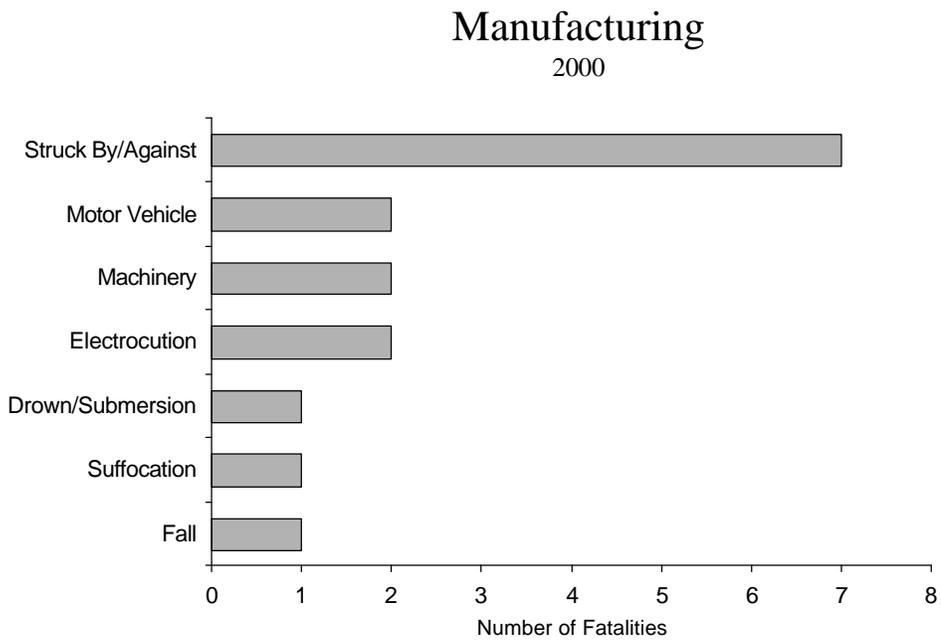


Figure 9

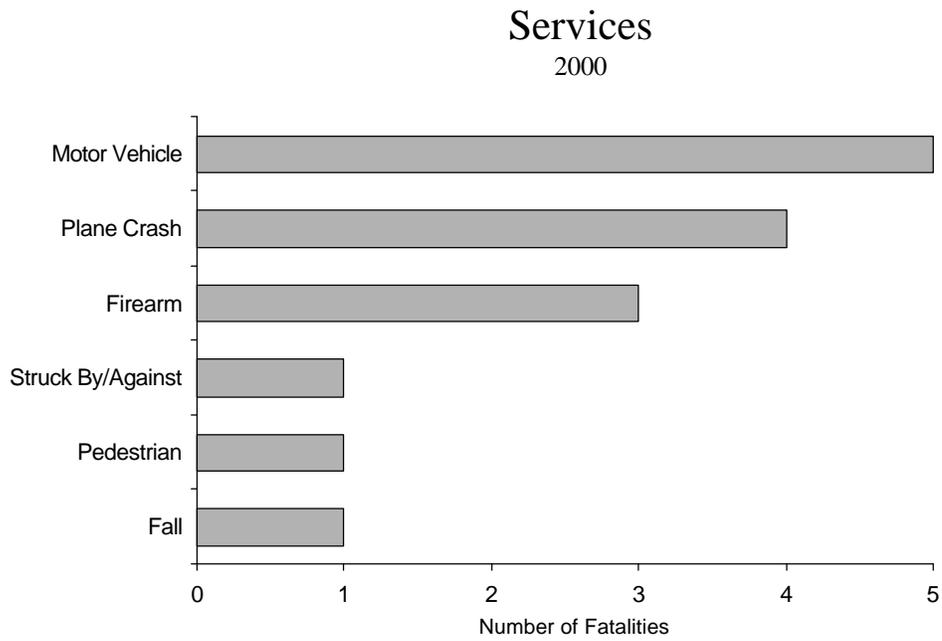


Figure 10

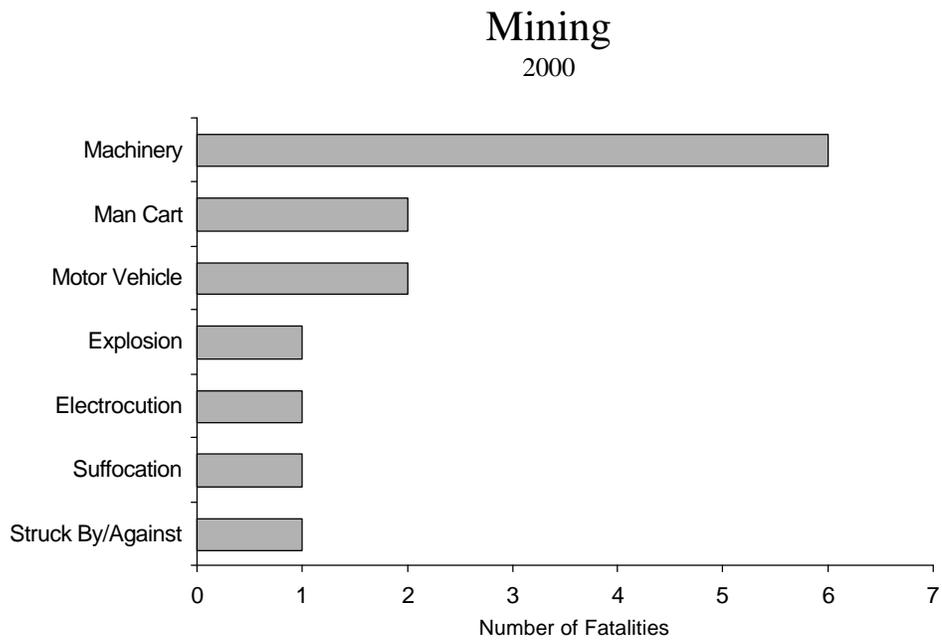


Figure 11

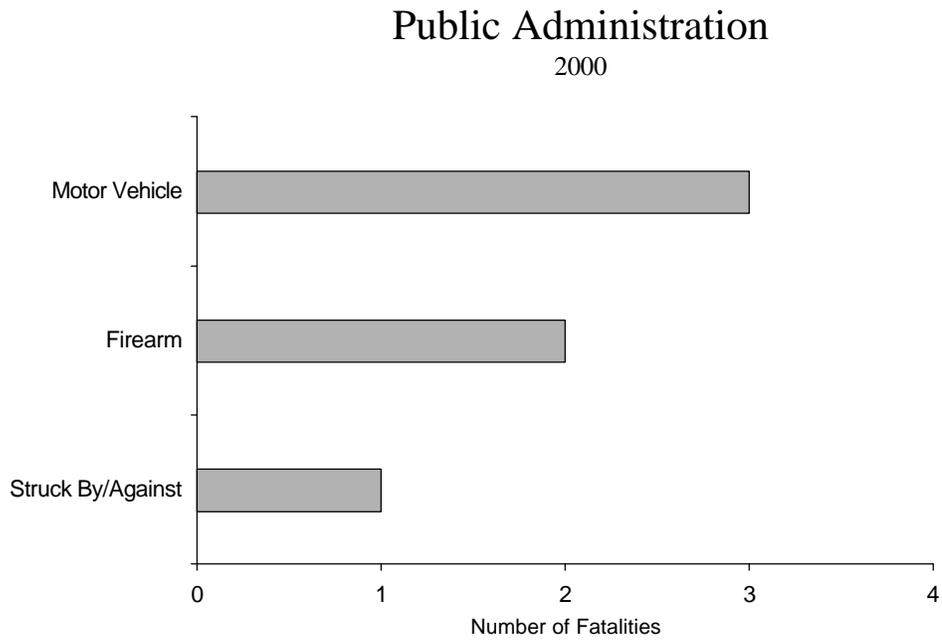


Figure 12

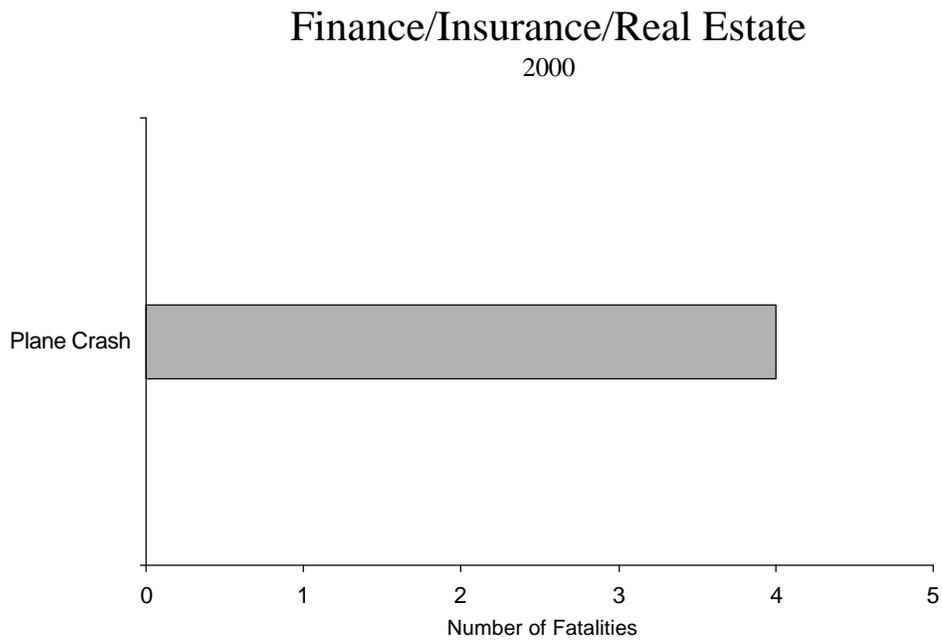


Figure 13

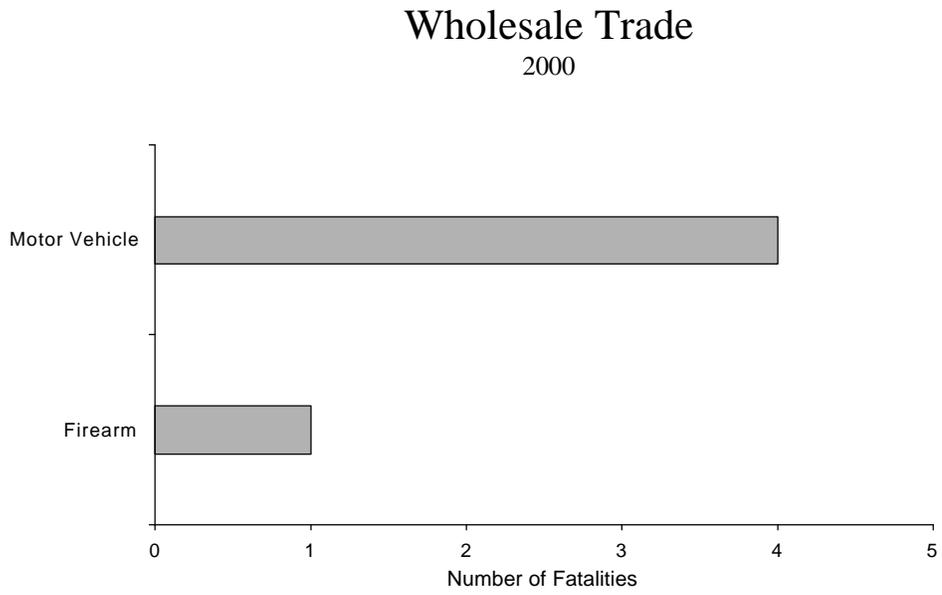


Figure 14



*Occupation*

Table 6 presents Kentucky work-related fatalities by occupation, classified using the *Alphabetical Index of Industries and Occupations*. The division of operators/fabricators/laborers accounted for the largest portion (n=60, 48%) of the work-related deaths in the state. Over half of the workers killed in this division were in transportation/material moving (n=32, 53%). The second highest number of deaths occurred in the farming/forestry/fishing division (n=23, 19%). The majority of these incidents were farming related (n=13, 57%) or logging/tree trimming related (n=8, 35%). Figures 15-21 show the leading cause or causes of death for each occupational division.

**Table 6. Work-Related Fatalities by Occupation (Rates per 100,000 Workers<sup>a</sup>), 2000**

Occupation	Number (%)	KY Rate	US rate <sup>b</sup>
Operators, fabricators, laborers	60 (48)	20	12
Transportation, material moving	32 (26)	35	24
Handlers, equipment cleaners, helpers, laborers	25 (20)	33	13
Machine operators, assemblers, inspectors	3 (2)	2	3
Farming, forestry, fishing	23 (19)	50*	26
Precision production, craft, repair	16 (13)	8	8
Technical, sales, administrative support	9 (7)	2	2
Managerial, professional specialty	7 (6)	1	2
Service6 (5)	2	3	
Military	3 (2)	(c)	8

<sup>a</sup> Employment averages obtained from *Geographic Profile of Employment and Unemployment, 1998 (Bulletin 2524)*. US Department of Labor, Bureau of Labor Statistics; November 1999.

<sup>b</sup> *Fatal Workplace Injuries in 1997: A collection of data and analysis (report 934)*. US Department of Labor, Bureau of the Census; July 1999.

<sup>c</sup> Military population was unavailable. Therefore a rate could not be included.

\*The fatality rate for farming, forestry, and fishing *occupations* is high partially because of the undercount of workers in this occupation. A more accurate fatality rate for agricultural workers in Kentucky can be found by using the rate for the agriculture/forestry/fishing *industry*.

Figure 15

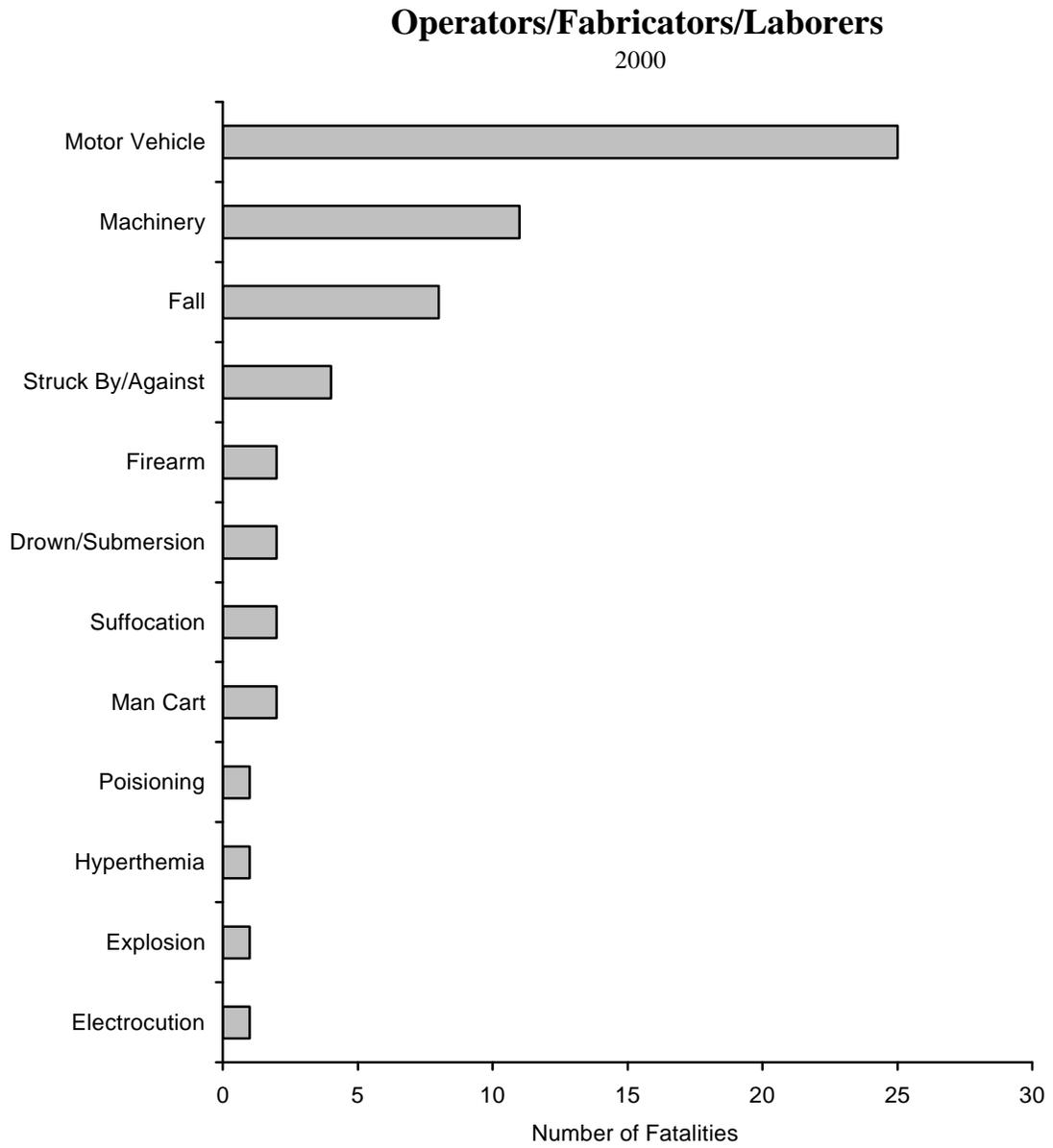


Figure 16

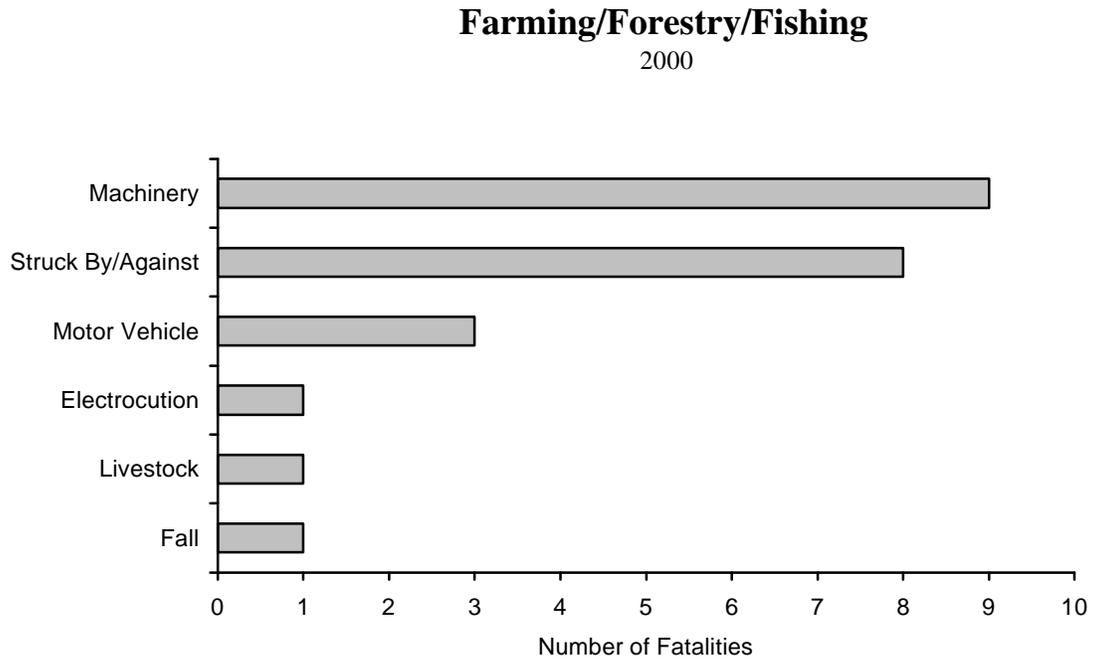


Figure 17

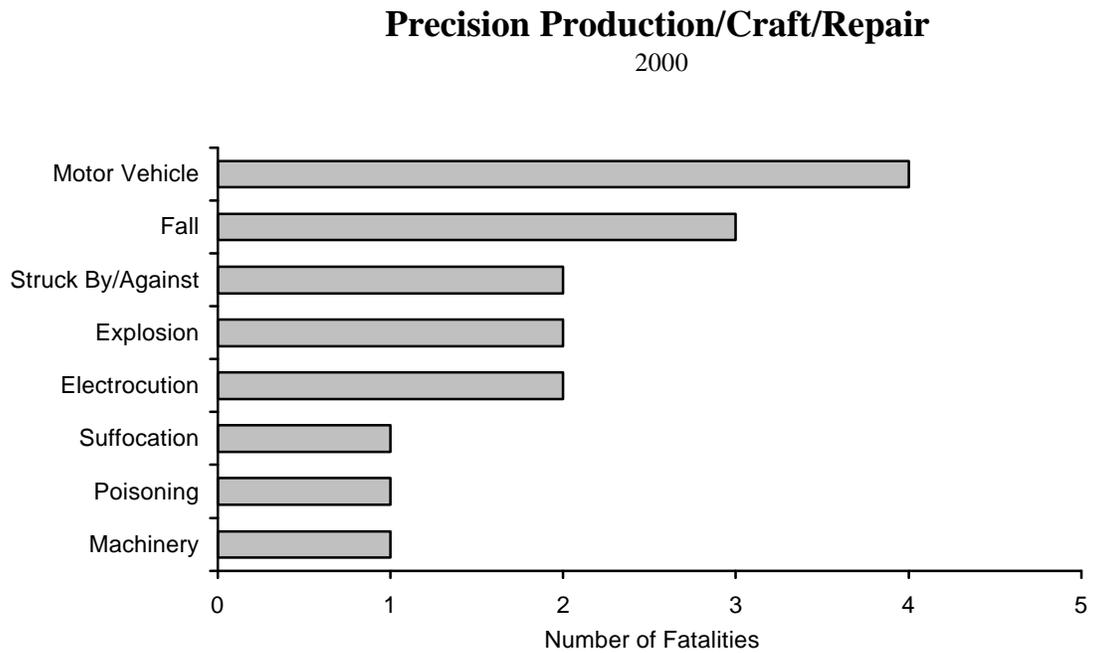


Figure 18

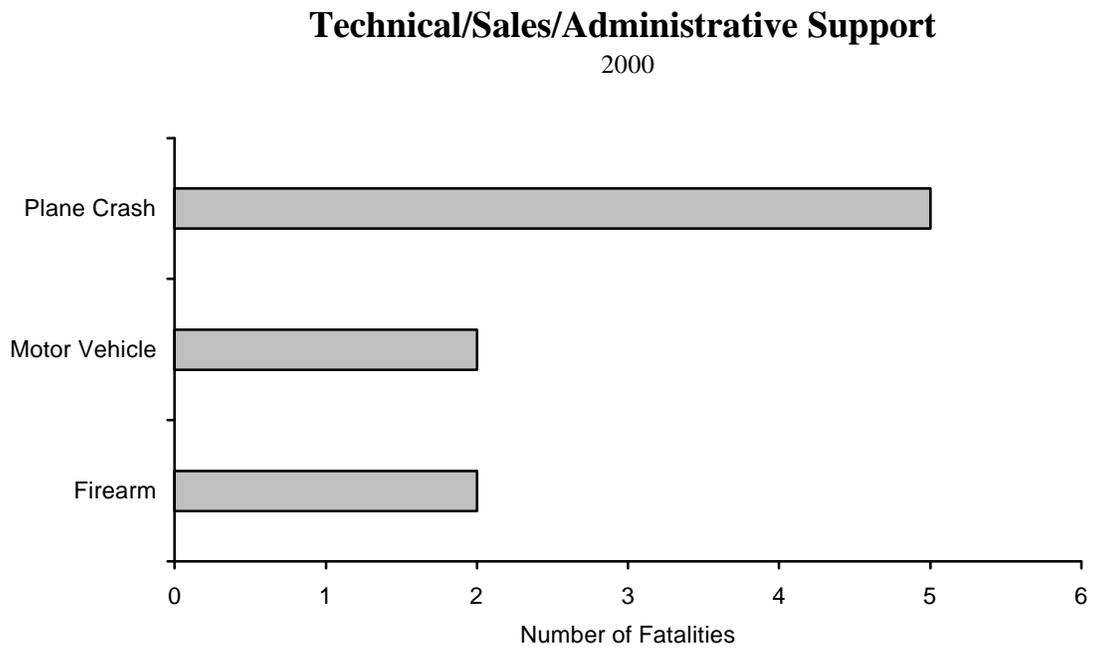


Figure 19

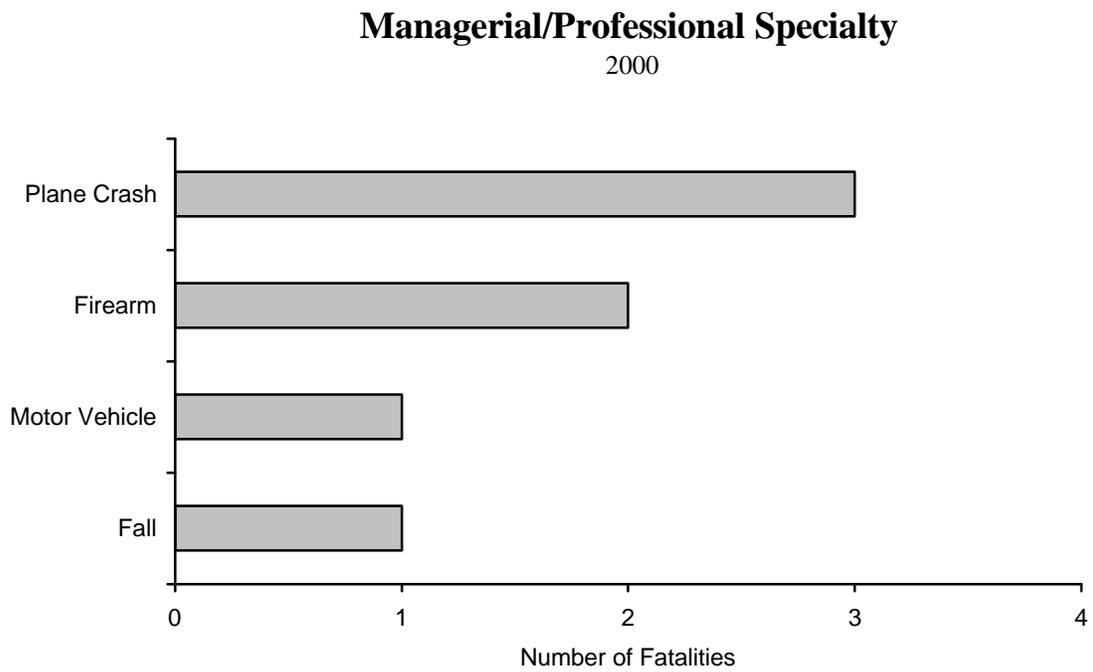


Figure 20

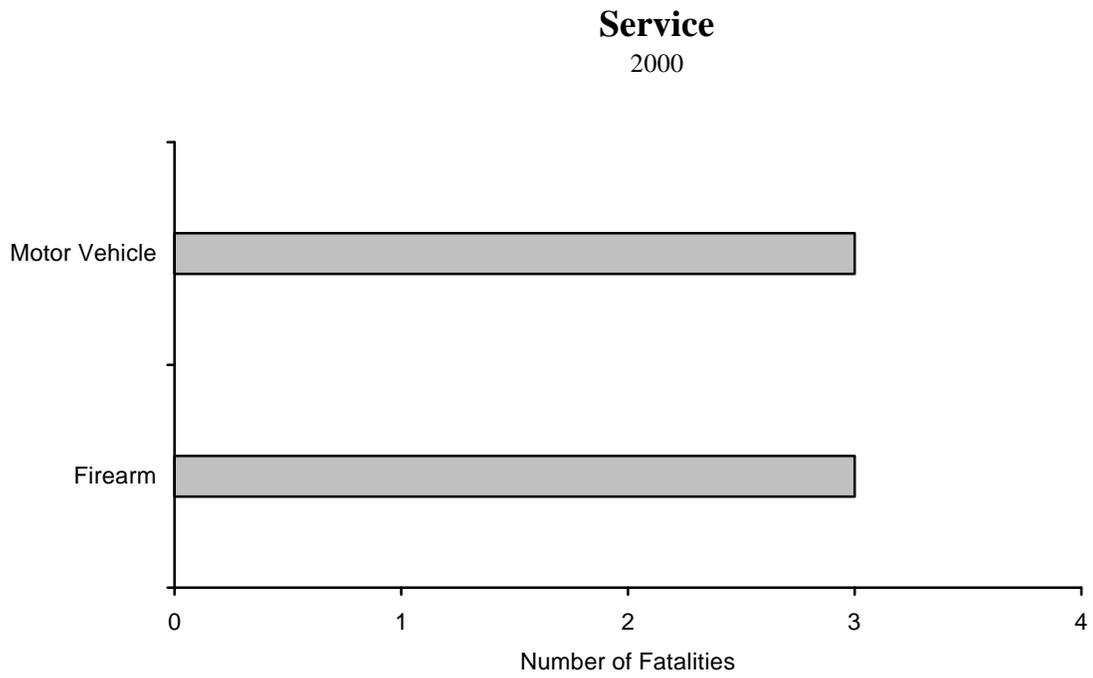
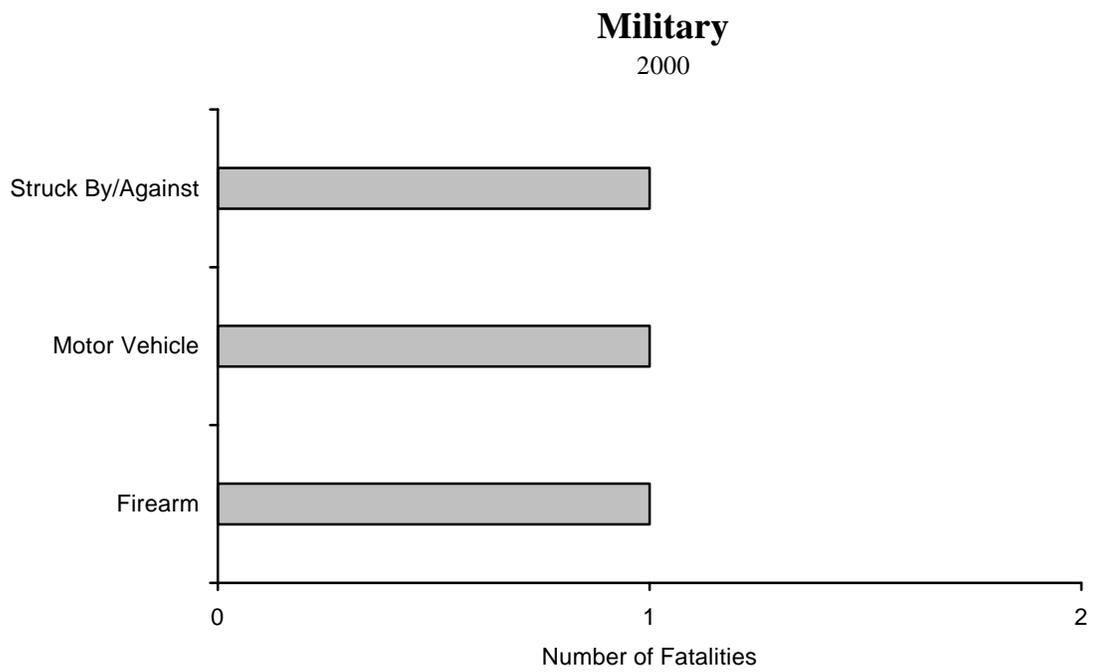


Figure 21



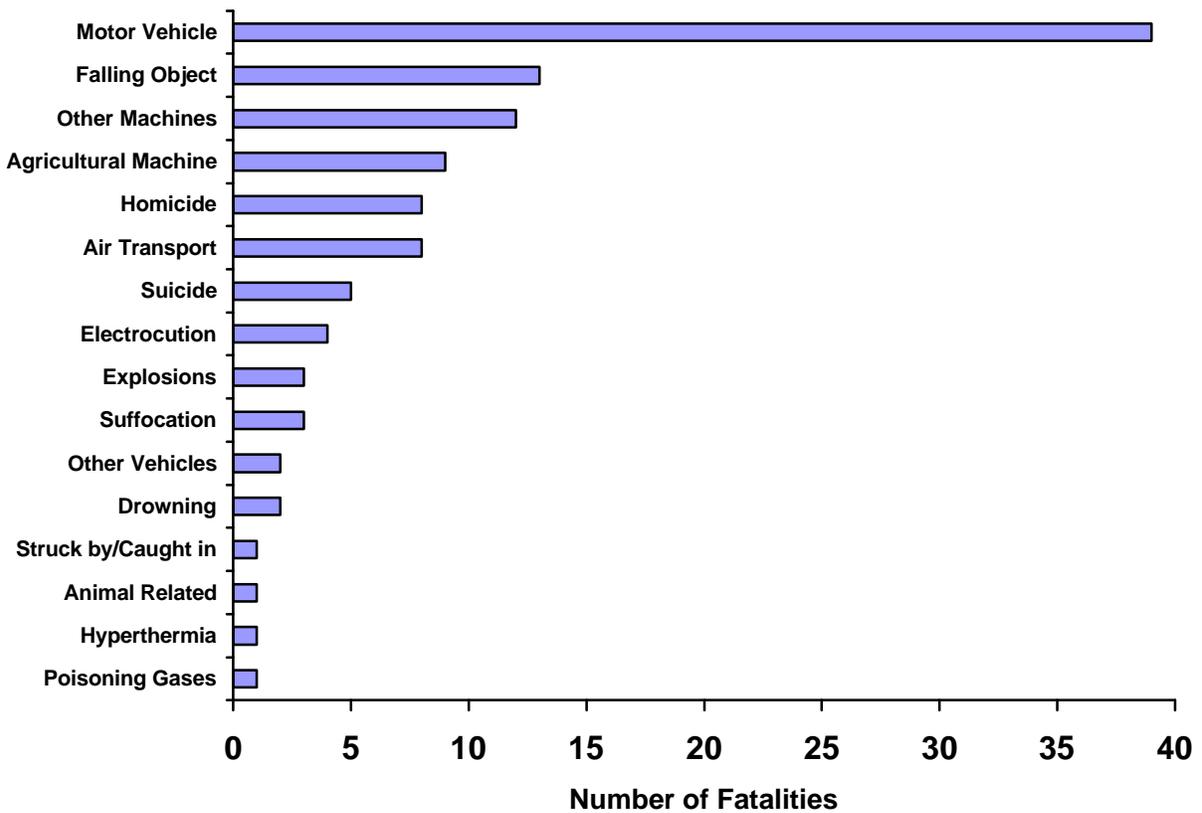
*External Cause of Death*

Figure 22 presents work-related fatalities by external cause of death as classified by E-code according to the *International Classification of Diseases, Ninth Revision (ICD-9)*. Again this year, nearly one-third (n=39) of the fatalities were due to motor vehicle incidents, making them the leading cause of occupational fatalities in Kentucky.

The second most common cause of death was due to being struck by falling objects (10%, n=13), such as trees (loggers) and rocks (miners). Seven percent (n=9) of the fatalities were due to agricultural machinery, and ten percent (n=12) were due to other types of machinery. Homicide, again, as in 1999, followed agricultural machinery, accounting for 6 percent (n=8) of the 2000 occupational fatalities.

Air transport, which was the second leading external cause of death for 1999 after a 1500 percent increase from the year prior, decreased by nearly half (47%) for 2000. Similar to last year, however, single incidents were responsible for multiple deaths. All eight air transport fatalities occurred in just two incidents, both of which were plane crashes, whereas some of the 1999 fatalities also included helicopters.

**Figure 22. Fatalities by External Cause of Death**



## SPECIAL TOPICS

### *Agricultural Fatalities*

Although agricultural fatalities have fallen for 2000, the number of fatalities, and particularly the fatality rate, remain high for this industry. Agriculture ranked third overall in number and second in rate for 2000 (ranked first in both in 1999). As mentioned previously, the fatality rate for the Agriculture/Forestry/Fishing division is somewhat artificially inflated because employment estimates for farmers include only those who farm full-time. Since many of Kentucky's farmers have other jobs and farm only part-time, the number of those working in the agriculture industry is underestimated, and therefore, inflates the fatality rate for this division. Still, a closer look at how these workers are being killed seems warranted. Table 7 describes the 17 workers killed in this industry. Continuing a positive trend, the proportion of occupational fatalities represented by agricultural machines has been steadily decreasing. It has dropped from twenty percent in 1996 to fifteen percent in 1997, to eleven percent in 1998, to nine percent in 1999, to a five-year low of seven percent for 2000. While the percentage of agricultural machinery related deaths has indeed dropped, it still accounts for about half (53%) of the Agriculture industry fatalities. Of the 9 deaths due to agricultural machinery in the agricultural industry (down from 11 in 1999), all were related in some way to tractors and some included attachments such as rotary mowers. Two other incidents were also tractor related but were classified as an MVC (roadway) and a struck-by (tree limb). There were three deaths due to tractor overturns (four in 1999), six due to falling from or standing next to a tractor and then being run over by it or its attachment, one due to getting caught in a rotating shaft, and one who was struck by a tree limb while driving a tractor. Forty-seven percent (n=8) of all agricultural-related deaths to farmers were age 60 or over.

Table 7. Agricultural Fatalities, 2000

Characteristic	Number (%)
Total	17(100)
Race/Ethnicity	
White	17(100)
Sex	
Male	17(100)
Age	
20-29	1 (6)
30-39	2 (12)
40-49	1 (6)
50-59	5 (29)
60-69	3 (18)
70-79	1 (6)
80 and Over	4 (23)
External cause of death	
Agricultural machine	9 (53)
Motor vehicle	3 (17)
Animal related	1 (6)
Falling object	1 (6)
Fall	1 (6)
Electrocution	1 (6)
Struck by/Caught in	1 (6)

*The following are some agricultural fatality case scenarios:*

- Farmer returning from tobacco warehouse where he had just taken tobacco to be sold lost control of truck and trailer.
- Farmer stopped a tractor with an attached rotary mower to replace lost pin and was run over by mower as tractor began to move.
- Man was run over by a piece of equipment while baling hay.
- Farmer ran tractor off road and overturned.
- Farmer was electrocuted when the aluminum irrigation pipe he was unloading contacted an overhead power line.
- Farmer became tangled in shaft of corn picker.
- Farmer fell from and drug by tractor.
- Farmer struck by tree limb while operating tractor.
- Farmer stopped a tractor with an attached rotary mower and was run over when knocked into gear.
- Farmer was changing flat front tire on tractor with front-end loader using bucket as a jack and accidentally knocked into gear and was run over.

*Motor Vehicle Crashes (MVCs)*

The leading cause of occupational fatalities in 2000 was again MVCs (n=39, 31%). For this analysis, information was drawn primarily from the Kentucky State Police's Fatal Accident Reporting System (FARS). Of those killed in MVCs, 38 (97%) were male and 1 was female (3%). Table 8 indicates the types of vehicles involved in these 39 MVCs.

**Table 8. Types of Vehicles Involved in MVCs, 2000**

Vehicle Type	Number	Percent
Truck:	31	79%
Tractor-Trailer	14	36%
Pick-up/Van/SUV	9	23%
Straight truck (flatbed, dump, cement)	8	20%
Pedestrians hit by MVCs	3	8%
Bus	1	2.6%
Agricultural vehicle*	1	2.6%
Car	1	2.6%
Golf Cart*	1	2.6%
Unknown Vehicle Type	1	2.6%
Totals	39	100%

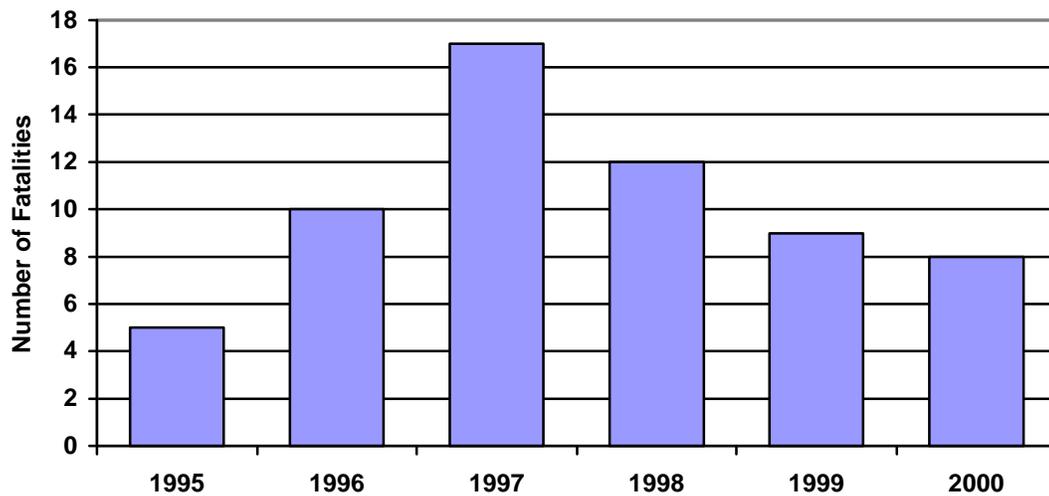
\*When vehicles that crash are traveling on a roadway, regardless of their intended use, they are considered MVCs.

The types of safety equipment used, if any, was also analyzed using FARS reports. For this analysis, information was only available on 30 of the cases. Of those 30 cases over 23 percent of the victims (n=7) had used no seatbelt or other safety restraint even though it was available, and almost 54 percent (n=16) had used some combination of seatbelt, harness or airbag. In the remaining 23 percent (n=7), safety restraints were not worn because either the victims were pedestrians or there was no restraint available.

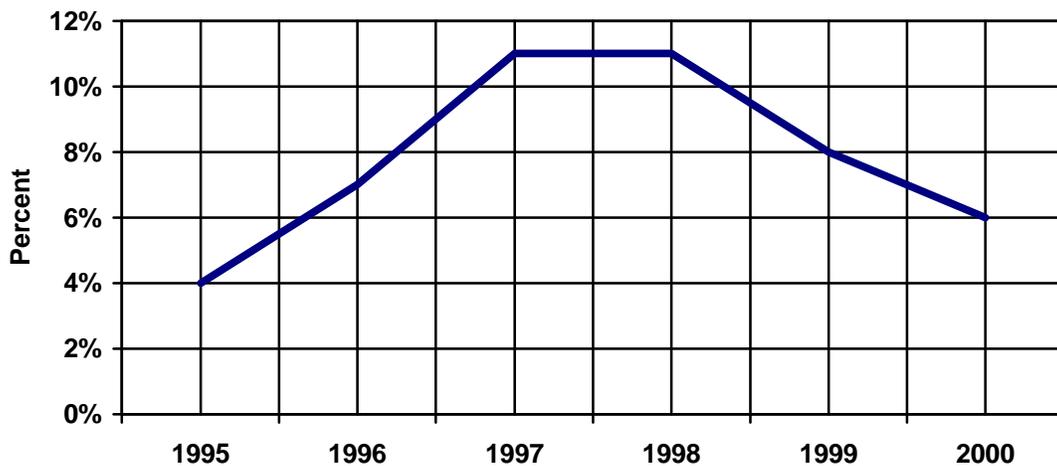
*Homicides*

For 2000, Kentucky saw a decrease in both the number (n=8), and the percentage of total occupational fatalities (6%) due to homicide. This continued the downward trend that began in 1998 (1997, n=17; 1998, n=12; 1999, n=9). While the number of homicides had dropped in 1998, the percentage of occupational fatalities remained the same as 1997 (11%) because of the overall drop in fatalities (1997, n=150; 1998, n=107). Figure 8 and Figure 9 depict total number of fatalities per year and occupational homicides as percent of total occupational fatalities.

**Figure 23. Occupational Homicides 1995-2000**



**Figure 24. Occupational Homicides as Percent of Total Occupational Fatalities**



*Women*

Four women were killed on the job during 2000, fewer than each of the previous 3 years. Table 9 briefly describes these four women and how they died.

**Table 9. Female Occupational Fatalities, 2000**

Case	Age/Occupation/External Cause of Death
1	A 47-year-old travel coordinator was killed in an airplane crash.
2	A 39-year-old maintenance worker was shot by her estranged husband as she exited an apartment that she had been cleaning.
3	A 47-year-old cosmetologist shot herself with a handgun while at work.
4	A 45-year-old truck driver was killed when the truck she was driving left the roadway and overturned.

Along with the drop in number of female occupational fatalities, their representation in both homicide and suicide as causes of death became less prominent as well. While they do continue to be represented in both homicide and suicide as external causes of death, the percentage of these fatalities compared to the number of overall occupational fatalities is more symmetric. Women accounted for only three percent of the total occupational fatalities for 2000 and 13 percent (n=1) of the 8 homicides. Men on the other hand, accounted for 97 percent of all occupational fatalities and 87 percent (n=7) of the homicides. Although homicides were responsible for 25 percent of the female occupational fatalities, they accounted for just six percent of the male fatalities. This statement is at least partly explained by the fact that males tend to work in other dangerous occupations, such as operating heavy equipment, more often than females. Suicide, as well, is over represented by women. In 2000 there were 5 suicides, one of which was a woman. Therefore, 25 percent of female workplace fatalities were suicides, whereas only three percent of male fatalities fell into this category.

*Out-of-State Residents*

Twenty-nine (23%) of the fatal incidents involved residents of 16 other states who died while working in Kentucky. Table 10 provides more detailed information about this group of workers. The highest number of out-of-state residents worked in the TCPU industry division (n=11); all of these workers were truck drivers, except one who worked in construction, and another who worked on communications towers. Like 1999, the most common cause of death was motor vehicle crashes (38%), with air transport ranking second (28%).

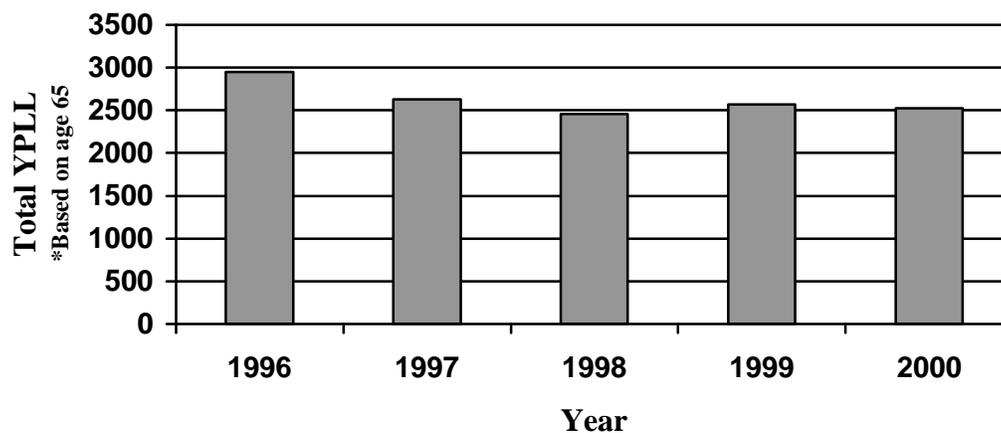
**Table 10. Occupational Fatalities Involving Non-Kentucky Residents, 2000**

Characteristic	Number	(%)
Total Non-KY Residents	29	(100)
Sex		
Male	27	(93)
Female	2	(7)
Race		
White	20	(69)
Black	5	(17)
Unknown	3	(10)
Other	1	(3)
Industry		
TCPU	11	(38)
Services	5	(18)
Finance/Insurance/Real Estate	4	(14)
Mining	3	(10)
Public Administration	3	(10)
Construction	2	(7)
Wholesale/Retail Trade	1	(3)
Occupation		
Operators/Fabricators/Laborers	17	(59)
Technical/Sales/Administrative	5	(18)
Managerial/Professional	3	(10)
Military	3	(10)
Precision Production/Craft/Repair	1	(3)
External Cause of Death		
Motor Vehicle	11	(38)
Air Transport	8	(28)
Other Vehicles	2	(7)
Other Machines	2	(7)
Self-Inflicted	2	(7)
Fall	2	(7)
Drowning	1	(3)
Struck By/Against	1	(3)

### *Years of Potential Life Lost (YPLL)*

One hundred and twelve workers who died in 2000 due to fatal occupational injuries in Kentucky represent a total of 2,522 years of potential life lost (YPLL) based on age 65, as YPLL is commonly calculated. There were 11 occupational fatalities with victims age 65 or over, and one with an unknown age during 2000 who were not included in these calculations. The total YPLL has been somewhat consistent over the last 5 years as shown in Figure 25. Amazingly, the five-year sum of YPLL for KY is 13,130.

**Figure 25. Total Years of Potential Life Lost\***



### **Future directions for Occupational Fatality Surveillance**

The next steps for surveillance of occupational fatalities nationwide should include:

- Standardize core variables and coding format (Census of Fatal Occupational Injuries and FACE)
- Determine if other mortality surveillance systems collecting similar data need to be continued (National Traumatic Occupational Fatalities)
- Establish Memorandums of Understanding (MOUs) among state and federal agencies participating in fatal occupational injury surveillance regarding data sharing
- Aggregate, interpret, and disseminate data/information on state/regional/national levels to promote prevention actions
- Integrate some occupational questions into field investigations conducted by others who collect data, such as state police doing homicide investigations or traffic safety personnel doing traffic fatality investigations

These are adopted from the draft report “State-Based Surveillance of Work-Related Diseases, Injuries, and Hazards” a report from the NIOSH-States Surveillance Planning Work Group, March 1999.



## REFERENCES

- 1997 Kentucky Deskbook of Economic Statistics*. 1997. Frankfort, KY: Kentucky Cabinet for Economic Development, Division of Research.
- 1998 Kentucky Deskbook of Economic Statistics*. 1998. Frankfort, KY: Kentucky Cabinet for Economic Development, Division of Research.
- 2000 Kentucky Deskbook of Economic Statistics*. 2000. Frankfort, KY: Kentucky Cabinet for Economic Development, Division of Research.
- Alphabetical Index of Industries and Occupations*. 1992. U.S. Department of Commerce. Washington, DC: US Government Printing Office.
- Fatal Workplace Injuries in 1993: A collection of data and analysis (Report 891)*. 1995. US Department of Labor, Bureau of the Census. Washington, DC: US Government Printing Office.
- Fatal Workplace Injuries in 1995: A collection of data and analysis (Report 913)*. 1997. US Department of Labor, Bureau of the Census. Washington, DC: US Government Printing Office.
- Fatal Workplace Injuries in 1997: A collection of data and analysis (Report 934)*. 1999. US Department of Labor, Bureau of the Census. Washington, DC: US Government Printing Office.
- Geographic Profile of Employment and Unemployment, 1995 (Bulletin 2486)*. 1997. US Department of Labor, Bureau of Labor Statistics. Washington, DC: US Government Printing Office.
- Geographic Profile of Employment and Unemployment, 1996 (Bulletin 2498)*. 1998. US Department of Labor, Bureau of Labor Statistics. Washington, DC: US Government Printing Office.
- Geographic Profile of Employment and Unemployment, 1997 (Bulletin 2515)*. 1999. US Department of Labor, Bureau of Labor Statistics. Washington, DC: US Government Printing Office.
- Geographic Profile of Employment and Unemployment, 1998 (Bulletin 2524)*. 1999. US Department of Labor, Bureau of Labor Statistics. Washington, DC: US Government Printing Office.
- International Classification of Diseases, Ninth Revision (ICD-9)*. 1993. Los Angeles CA: Practice Management Information Corporation.

*Standard Industrial Classification Manual*. 1987. Office of Management and Budget. Springfield VA: National Technical Information Service. (NTIS No. PB 87-100012).

Struttman TW, Scheerer A, Moon E. Potentially Productive Years of Life Lost (PPYLL) in Kentucky Due to Occupational Fatalities, 1994-1996. *J Ky Med Assoc*. 1998;96:369-373.

US Department of Labor, Bureau of Labor Statistics. National Census of Fatal Occupational Injuries, 1996. *News*. 8/7/97, USDL #97-266.

*Appendix A*

-----FINAL - For Administrative Use Only--Limited Distribution--Not for Publication-----

# Fatality Assessment and Control Evaluation Project

Public Health

KY FACE #00KY051

6 December 2000

TO: Michael Auslander, DVM, MSPH, Kentucky Department for Public Health, Division of Epidemiology, Surveillance and Investigations Branch

FROM: Mike Pope, DVM, KY FACE Project Manager

SUBJECT: Logger Fatally Injured by Falling Tree

## SUMMARY

A 73-year-old male self-employed logger (the victim) was killed when he presumably was struck on the head by a branch of a falling tree. He and his son, the only other logger on site, had finished a break and had been working approximately 30 minutes when the incident occurred. The son was operating a skidder attached to the base of a tree that had been cut, but was still standing, nearly vertical, hung in the fork of another tree. He was pulling the base away from the stump so that the tree would fall to the ground. The father was watching, waiting for the tree to come down so that he could begin trimming away the branches. After the tree hit the ground, the son got off of the skidder intending to help his father trim the branches, but he didn't see his father. Searching the site, he found his father unresponsive, slumped forward on his knees, in the branches of the fallen tree. Since there were no telephones on site, the son took a van that they had parked in a clearing nearby to call for help. As he was driving through a pasture toward the landowners house, he came upon the landowner who was loading cattle and asked him to go to the house to call 911 so that he could return to the scene. Upon returning to his father, the son had to cut away some branches in order to reach him. He moved his father out from under the branches and held him in his lap, waiting for help to arrive. Emergency medical services (EMS) were dispatched to the scene after receiving the call at 7:40 a.m., and arrived at 8:00 a.m. One of the EMS workers, also being a coroner, pronounced the victim dead at the scene, immediately upon their arrival. In order to prevent similar instances from occurring, FACE investigators recommend that:

- Loggers should attend the Master Logger Program for education regarding Occupational Safety and Health Administration (OSHA) logging standards and safety procedures.
- A clear escape path should always be planned when felling a tree and no one except for the person cutting the tree, or in this case, skidding the tree, should be in the area.
- A hazard assessment of the logging site should be completed before beginning work to identify and control potential hazards.
- Appropriate personal protective equipment (PPE) should be worn at the logging site.

## INTRODUCTION

On July 25, 2000, a county coroner notified FACE investigators of a 73-year-old male logger who had been killed earlier that morning. An investigator traveled to the site on July 27 and an interview was conducted with the county coroner who responded to the scene. The scene was visited, photographs and measurements were taken, and the landowner was interviewed. The son was interviewed at a later date by telephone. A copy of the coroner's report and the death certificate were obtained.

## INVESTIGATION

The victim was a self-employed logger and had been logging for about 35 years. He and his son had been logging this particular tract for about two weeks, and they had been logging for the same landowner for about a month. The hardwood logs were to be sold at a local sawmill and the income split with the landowner.

The weather was hot and dry, and had been for some time. The terrain of this particular tract was fairly mild, with a slope of less than eight degrees in the immediate area. Their usual routine involved arriving at daybreak (about 5:00-5:30 a.m.) and working for a few hours until it got too hot, usually stopping by noon. The father usually felled a tree, both the father and the son trimmed branches, and the son dragged the tree/log to a clearing with a skidder. They typically completed this process for each tree before beginning another. Neither wore any personal protective equipment.

On the day of the incident, they arrived at dawn and worked for about 2 hours before taking a break. Approximately 30 minutes after their break, the son was using the skidder to free up a 22-inch diameter (at the base) 80 feet tall tree that had been cut, but had not fallen, due to being caught in the fork of another tree. He attached a cable from the skidder to the base of the tree, and pulled the base away from the stump so that the tree would fall the rest of the way to the ground. The father was watching, waiting for the tree to come down so that he could begin trimming away the branches. The tree hit the ground after the base had moved about 60 feet from the stump. The 35 feet long 11-inch diameter fork of the second tree in which the first one was stuck broke off and came down as well. Having successfully felled the tree, the son stopped

the skidder and got off to help his father trim the branches, but he didn't see his father. Searching the site, he found his father unresponsive, slumped forward on his knees, in the smaller (1-3 inch diameter) branches of the fallen tree. The son immediately went to call for help. Since there were no telephones on site, he took a van that they had parked in the clearing nearby and drove toward the landowners home to make the call. On his way, as he was driving through a pasture, he came upon the landowner who was loading cattle, told him that his father had been struck by a tree and asked him to go call 911 so that he could return to the scene. The son then returned to his father and proceeded to extricate him from the branches of the fallen tree, having to cut some branches with his chain saw to reach him. Once he had moved his father from the tree branches, he held him in his lap waiting for help to arrive. Emergency medical services were dispatched when they received the call from the landowner at 7:40 a.m., and arrived at the scene at about 8:00 a.m. One of the EMS workers, also being a County Coroner, pronounced the victim dead at the scene, immediately upon their arrival. Death was thought to have been instant or near instant.

### CAUSE OF DEATH

The cause of death on the coroner's report was depressed skull fracture/cervical spine fracture due to logging accident.

### RECOMMENDATIONS/DISCUSSION

**Recommendation #1:** Loggers should attend the Master Logger Program for education regarding OSHA logging standards, safe logging techniques, and best management practices.

**Discussion:** The Kentucky Forest Conservation Act requires that as of July 15, 2000 a Kentucky Master Logger is on-site and in charge of all commercial logging operations. Master Loggers are also required to carry their Designation Card with them. Loggers should be aware of OSHA standards and proper logging techniques to ensure a safe work environment. In this case, the son was registered for the program but had not yet attended. The father had not attended nor did he have plans to attend the program, as the son would serve as the on-site Master Logger. For more information about the Kentucky Master Logger Program, contact the Kentucky Department of Natural Resources (502-564-4496).

**Recommendation #2:** A clear escape path should always be planned when felling a tree and no one except for the person cutting the tree, or in this case, skidding the tree (to complete its fall), should be in the area.

**Discussion:** Felling trees is dangerous, even with the most skilled and/or experienced loggers. A falling tree can strike objects on the way down or on the ground sending them in unpredictable directions with lethal force. There is also, of course, the obvious potential of being struck by the tree that is being felled. As inconvenient as it may sometimes seem, no one except the feller should be within two tree lengths of the tree being felled. In fact, OSHA regulations state that "no employee shall approach a feller closer than two tree lengths of trees being felled until the feller has acknowledged that it is safe to do so, unless the employer demonstrates that a team of employees is necessary to manually fell a particular tree" [29 CFR 1910.266 (h) (1) (iv)]. Another OSHA standard [29 CFR 1910.266 (h) (1) (v)] states that "no employee shall approach

a mechanical felling operation closer than two tree lengths of the trees being felled until the machine operator has acknowledged that it is safe to do so.” These regulations are intended to reduce or remove the risk of injury from anyone not directly involved with felling the tree.

Initially, the father was the feller, and should have been the only one within two tree lengths. However, once the tree became lodged and the decision was made to use the skidder to complete the task, the only person that should have been within the two tree length area was the son, since he, as the machine operator, was now responsible for felling the tree. The father had no reason to be within the immediate two tree length area while the son brought the tree down with the skidder.

In this incident, it isn't clear exactly where the father was standing when the son began pulling the tree with the skidder. It is clear, however, that he placed himself in danger by not remaining a safe distance away until the tree was completely down and the area declared safe (by his son, the “machine operator”) for his presence. Being self-employed, the victim wasn't governed by OSHA regulations - although following them may have saved his life.

**Recommendation #3:** A hazard assessment of the logging site should be completed before beginning work to identify and control potential hazards.

**Discussion:** The logging site should be evaluated for potential hazards such as dead, rotten or broken limbs and trees (also known as snags or “widowmakers”), as well as lodged trees and limbs. In addition, a hazard assessment should include factors such as lean of the tree to be felled, location of other trees or obstacles in the area, wind conditions, and slope of the land.

**Recommendation #4:** Appropriate personal protective equipment should be worn at the logging site.

**Discussion:** OSHA regulations for logging state that employers should provide employees with appropriate head protection and ensure that it is worn when the employee works in an area where there is potential for head injury from falling or flying objects [29 CFR 1910.266 (d) (1) (vi)]. Again, being self-employed, the victim wasn't governed by OSHA regulations. However, wearing appropriate head protection could have lessened the impact of the limbs from the falling tree and the fatal injury may have been avoided. Although it is not known for certain whether a hard hat would have prevented this fatal injury, wearing all appropriate PPE should be practiced by all loggers at the logging site, whether OSHA regulated or not.

## References

Code of Federal Regulations 29 CFR 1910.266, 1999 edition. U.S. Government Printing Office, Office of the Federal Register, Washington, D.C.

*Appendix B*

**KENTUCKY INJURY PREVENTION AND RESEARCH CENTER  
OCCUPATIONAL INJURY PREVENTION PROGRAM**

**FACE Project  
 Report Request Form**

Please send copies of FACE investigation reports, as indicated below, to:

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Format Desired: Paper \_\_\_\_\_ Disk (WordPerfect format) \_\_\_\_\_

Please check each report on the list below that you would like to receive and send this form to: KY FACE Project, 333 Waller Avenue, Suite 202, Lexington KY 40504-2915; or FAX to (859) 257-3909. If you need additional information, please contact Mike Pope at (859) 257-4955, or (within Kentucky) (800) 204-3223.

**Fatality Investigation Reports:**

- |               |                                                                                   |
|---------------|-----------------------------------------------------------------------------------|
| _____ 94KY029 | Tree Trimmer Dies After 50 Foot Fall While In Bucket Truck                        |
| _____ 94KY038 | Logger Killed When Struck by Log That Rolled off Truck During Unloading Operation |
| _____ 94KY040 | Tractor Overturn Kills Farmer                                                     |
| _____ 94KY043 | Part-time Farmer Dies After Tractor Leaves Public Roadway and Overturns           |
| _____ 94KY044 | Part-Time Farmer Drowns In Pond After Tractor Rollover                            |
| _____ 94KY045 | Part-Time Farmer Dies After Pick-up Truck Overturns                               |
| _____ 94KY051 | Demolition Foreman Dies After 35 Foot Fall Through Hole in Flat Roof              |
| _____ 94KY059 | Farmer Dies After Being Run Over By Tractor While Checking Gas Wells              |
| _____ 94KY063 | Farmer Is Run Over By Tractor After Losing Control on a Public Roadway            |
| _____ 94KY078 | Farmer is Killed After Being Run Over By Wagon                                    |
| _____ 94KY084 | Part-time Farmer is Killed After Losing Control of His Tractor                    |
| _____ 94KY090 | Farm Worker is Killed in Tractor Rollover                                         |
| _____ 94KY091 | Part-Time Farmer is Killed in ROPS-Equipped Tractor Rollover                      |
| _____ 94KY097 | Farm Tractor Overturns Crushing Part-time Farmer                                  |
| _____ 94KY100 | Farmer Killed When Tractor Overturns                                              |
| _____ 94KY111 | Farmer Struck by Truck and Killed on Public Roadway                               |
| _____ 94KY115 | Farmer Pinned When Tractor Overturns Into Dry Creek Bed                           |
| _____ 94KY124 | Retiree Killed When Tractor Overturns                                             |
| _____ 94KY144 | Retiree Dies After Tractor Overturns into Creek                                   |
| _____ 94KY161 | Log Loader Runs Over Worker at Stave Mill                                         |
| _____ 95KY011 | Farmer Killed When Run Over by Tractor in Barn                                    |
| _____ 95KY015 | Prison Employee Killed in Tractor Rollover                                        |
| _____ 95KY017 | Retiree/Part-time Farmer Killed When Run Over by Bush Hog                         |
| _____ 95KY030 | 86-Year-Old Farmer is Killed After Being Hit By Tree Branch                       |
| _____ 95KY039 | Farmer Killed in Tractor Rollover                                                 |
| _____ 95KY043 | Farmer Killed After Tractor Overturns Into Creek Bed                              |
| _____ 95KY046 | Farmer is Run Over by Disc After Falling from Tractor                             |
| _____ 95KY047 | Retiree Dies in Tractor Rollover                                                  |
| _____ 95KY050 | Farmer Run Over After Falling From Tractor                                        |
| _____ 95KY055 | Farmer Crushed in Hay Baler                                                       |
| _____ 95KY068 | Welder Crushed by Unmanned Pipelayer                                              |

___ 95KY073	Logger Killed in Endloader Rollover
___ 95KY078	Logger Killed by Falling Snag
___ 95KY088	Farm Worker Killed in Tractor Rollover on Public Roadway
___ 95KY089	Logger Killed in Bulldozer Rollover
___ 95KY102	Logger Killed When Log Rolls Off Truck at Sawmill
___ 95KY110	Log Rolls Off Truck During Unloading and Strikes Logger
___ 95KY122	Farmworker Killed When Caught in Power Take-Off (PTO)
___ 95KY126	Farmer Dies in Cornpicker
___ 96KY009	Farmer Strangled by Jacket Caught on Exposed Auger Shaft
___ 96KY018	Worker Killed in Fall from Oil Tank
___ 96KY019	Logger Killed by Falling Snag
___ 96KY028	Welder is Crushed by Rock Chipper
___ 96KY037	Farmer Killed When Thrown from Tractor
___ 96KY046	Logs Roll off Truck at Sawmill, Killing Truck Driver
___ 96KY049	Maintenance Worker Killed in 25-foot Fall from I-Beam
___ 96KY050	Front End Loader Overturns on Seed/Fertilizer Store Owner
___ 96KY071	Farmer Killed When Caught in Hay Baler
___ 96KY073	Farmer Killed When Crushed by Tractor
___ 96KY077	Mill Owner Dies in Tractor Rollover
___ 96KY085	Retired Farmer Thrown From and Run Over by Tractor
___ 96KY088	Farmer Killed in Tractor Rollover
___ 96KY089	Logger Killed by Falling Snag
___ 96KY093	Welder Dies after 30-foot Fall from Steel Structure
___ 96KY102	Logger Killed When Struck by Tree
___ 96KY105	Hunting Preserve Operator Crushed By Rotary Cutter
___ 96KY106	Logger Killed in Skidder Rollover
___ 96KY122	Sawmill Worker Killed by Circular Saw
___ 96KY125	Pug Mill Operator Killed After Entanglement
___ 97KY008	Farmer Killed on Tractor During Logging Operations
___ 97KY016	Farmer Killed When Tractor Turns Over
___ 97KY018	Logger Killed During Tree Felling
___ 97KY019	Farmer Killed When Tractor Overturns on Embankment
___ 97KY028	Farmer Killed When Tractor Slides Over Embankment While Mowing
___ 97KY029	Rear Tractor Rollover Kills Farmer
___ 97KY031	Logger Killed when Struck By Tree Limb During Hauling
___ 97KY032	Bulldozer Operator Killed in Rollover
___ 97KY044	Tractor/Baler Operator Killed in Entanglement
___ 97KY071	Professional Roofer Dies in Fall
___ 97KY073	Logger Crushed During Repair Work on Skidder
___ 97KY080	Farmer Run Over by Rotary Mower
___ 97KY093	Farmer Killed in Tractor Rollover
___ 97KY110	Skidder Operator Thrown from Vehicle During Rollover
___ 97KY111	Construction Worker Dies in Seven-Foot Fall
___ 97KY122	Dislodged Tree Strikes Logger
___ 98KY014	Electrician Dies in 6-foot Fall from Ladder
___ 98KY018	Farmer Dies When Caught Beneath Overturned Tractor
___ 98KY024	Farmer Run Over by Tractor
___ 98KY031	Factory Worker Caught in Overhead Conveyor While Hanging Transformers
___ 98KY044	Factory Worker Entangled in Conveyor Belt Rollers
___ 98KY046	Tractor Operator Killed by Rotary Mower while Mowing Highway Right-of-Way
___ 98KY049	53-year-old Dies in Tricycle Tractor Overturn while Transporting Round Bale
___ 98KY056	66-year-old Male Dies in Tractor Overturn While Mowing

- \_\_\_\_\_ 98KY063    Logger Fatally Injured by Falling Limb
- \_\_\_\_\_ 98KY072    Farmer Killed When Tractor Punctures Gas Line Causing an Explosion
- \_\_\_\_\_ 98KY077    Tractor Driver Killed in Overturn While Mowing
- \_\_\_\_\_ 98KY099    Knotted Log Rolls Off Truck and Kills Logger at Sawmill
- \_\_\_\_\_ 98KY103    Log Rolls off Truck at Sawmill Killing Employee
- \_\_\_\_\_ 98KY106    Log Rolls off Truck at Sawmill Killing the Truck Driver
- \_\_\_\_\_ 98KY115    Lumber Company Employee Falls 48" From Storage Rack to his Death
- \_\_\_\_\_ 98KY116    Road Construction Worker Killed in Tractor Overturn
  
- \_\_\_\_\_ 00KY051    Logger Fatally Injured by Falling Tree



*Appendix C***Evaluation of KY FACE Project  
16<sup>th</sup> Annual Governor's Safety and Health Conference and Exposition on May 11, 2000**

The Kentucky Fatality Assessment and Control Evaluation (KY FACE) Project conducted a presentation at the 16<sup>th</sup> Annual Governor's Safety and Health Conference and Exposition on May 11, 2000, and administered surveys to obtain valuable feedback on the project and its efforts. Thirty-three surveys were collected after the discussion. Results are summarized below.

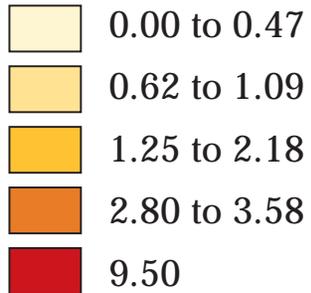
Most (87%) of the participants were not aware of KY FACE before the presentation. Almost all of the participants (90%) indicated that they had a better understanding of the occupational fatality problem in Kentucky after the presentation (60% agreed and 30% strongly agreed). Again, almost all of the participants (95%) thought the presentation was easy to understand (52% agreed and 46% strongly agreed). Over half (60%) agreed that the presentation had prompted them to change safety practices at their worksite (48% agreed and 18% strongly agreed). Of the participants surveyed over half (64%) agreed that the presentation was valuable to their work (49% agreed and 15% strongly agreed). Interestingly, although four of the participants (12%) indicated that they did not think the presentation was valuable, two of these participants stated that the presentation had prompted them to change safety practices at their worksite and a third participant stated that he/she would pass along ROPS information to employees. These answers are contradictory, suggesting that perhaps the question regarding value should be reworded.

The participants made several different comments on what they liked best and least about the presentation. One participant said, "the two presenters did a super job of laying out each situation" and another said he/she feels "inspired to use as safety topic for newsletter." Many said they liked the information and the statistics. There were several suggestions to improve the presentations. A few suggested that lawnmower safety be included as well as having more information/specifics on other injuries/fatalities in the workplace. Many of the participants were laborers or administrators, however the professions of the participants were varied.



# Fatalities in Kentucky's Workforce 1996-2000

Percent of Total  
Workforce Fatalities



Total "on-the-job"  
fatalities = 641

5 = number of  
fatalities for each  
county

