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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www.kiprc.uky.edu

*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 Struttmann, MSPH

- Poster display at the 5th World Conference on Injury Prevention and Control held in New Delhi, India in March 2000:
  “Describing Occupational Fatalities Using Linked Data Sets” Tim Struttmann, MSPH, Susan Wojcik, MS and Donna Reed, BS

- Oral presentation, KY Coroners' Annual Conference, Louisville, KY, April 2000 (sixth consecutive year).


- 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 Struttmann 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 Struttmann, 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 Struttmann, MSPH

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

“Describing Occupational Fatalities Using Linked Data Sets” Tim Struttmann, 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:

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


Brandt VA, Struttmann 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 Struttmann’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 landowner’s 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 mpole@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

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspapers</td>
<td>49%</td>
</tr>
<tr>
<td>Vital Statistics</td>
<td>24%</td>
</tr>
<tr>
<td>KY State Police Fatal Accident Reporting System</td>
<td>5%</td>
</tr>
<tr>
<td>Coroners</td>
<td>4%</td>
</tr>
<tr>
<td>Kentucky Department of Labor</td>
<td>14%</td>
</tr>
<tr>
<td>Community Partners for Healthy Farming</td>
<td>1%</td>
</tr>
<tr>
<td>Medical Examiner</td>
<td>1%</td>
</tr>
<tr>
<td>MSHA</td>
<td>1%</td>
</tr>
<tr>
<td>NIOSH</td>
<td>1%</td>
</tr>
</tbody>
</table>

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
Figure 3 shows a map of Kentucky with the number of work-related fatalities that occurred in each Area Development District. The Bluegrass District (the Area Development District that includes Lexington-Fayette County) had the most fatalities with 21, followed closely by KIDPA (the district that includes Louisville – Jefferson County) with 20, and Big Sandy with 12.

Figure 3. Number of Occupational Fatalities in Kentucky per Area Development District (ADD)
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

<table>
<thead>
<tr>
<th>County</th>
<th>Fatalities</th>
<th>Rate per 100,000 workers*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Pike</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Christian</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Pulaski</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Harrison</td>
<td>4</td>
<td>55</td>
</tr>
<tr>
<td>Kenton</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Martin</td>
<td>4</td>
<td>147</td>
</tr>
<tr>
<td>Total KY</td>
<td>124</td>
<td>7</td>
</tr>
</tbody>
</table>


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

<table>
<thead>
<tr>
<th>County</th>
<th>Fatality Rate</th>
<th>County</th>
<th>Fatality Rate</th>
<th>County</th>
<th>Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>147</td>
<td>Russell</td>
<td>19</td>
<td>Lincoln</td>
<td>9</td>
</tr>
<tr>
<td>Harrison</td>
<td>55</td>
<td>Christian</td>
<td>18</td>
<td>Laurel</td>
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</tr>
<tr>
<td>Bracken</td>
<td>51</td>
<td>Estill</td>
<td>18</td>
<td>Muhlenberg</td>
<td>9</td>
</tr>
<tr>
<td>Morgan</td>
<td>43</td>
<td>Trigg</td>
<td>17</td>
<td>Floyd</td>
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<td>Fleming</td>
<td>17</td>
<td>Woodford</td>
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<td>Cumberland</td>
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<td>McCreary</td>
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<td>Jessamine</td>
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<td>Bell</td>
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<td>McCracken</td>
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<tr>
<td>Monroe</td>
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<td>10</td>
<td>Bullitt</td>
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<tr>
<td>Pulaski</td>
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<td>Anderson</td>
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<td>Hardin</td>
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<td>Bourbon</td>
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<tr>
<td>Todd</td>
<td>19</td>
<td>Mercer</td>
<td>9</td>
<td>Fayette</td>
<td>1</td>
</tr>
</tbody>
</table>

* 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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>Percent</th>
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</thead>
<tbody>
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<td>Total Fatalities</td>
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<td>100</td>
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<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>120</td>
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<tr>
<td>Female</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Race</td>
<td></td>
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<tr>
<td>White</td>
<td>103</td>
<td>83</td>
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<td>9</td>
<td>7</td>
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<tr>
<td>Age</td>
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<td>&lt;20</td>
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<tr>
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<td>40 - 49</td>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>50 - 59</td>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>60 - 69</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>70 - 79</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>80-89</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>&gt;80</td>
<td>1</td>
<td>&lt;1</td>
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<tr>
<td>Unknown</td>
<td>1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Married</td>
<td>82</td>
<td>66</td>
</tr>
<tr>
<td>Divorced</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td>High school graduate</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>Some college</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>College graduate</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Unknown</td>
<td>36</td>
<td>29</td>
</tr>
</tbody>
</table>
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 workersa)

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

c 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).
*Transportation/Communications/Public Utilities
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

Transportation/Communication & Public Utilities

2000

Number of Fatalities

Motor Vehicle
Fall
Poisoning
Struck By/Against
Machinery
Firearm

Figure 6

Construction

2000

Number of Fatalities

Fall
Motor Vehicle
Machinery
Struck By/Against
Explosion
Drown/Submersion
Suffocation
Firearm
Figure 7

Agriculture/Forestry/Fishing
2000

- Machinery
- Motor Vehicle
- Struck By/Against
- Electrocution
- Natural/Environ.
- Fall

Number of Fatalities

Figure 8

Manufacturing
2000

- Struck By/Against
- Motor Vehicle
- Machinery
- Electrocution
- Drown/Submersion
- Suffocation
- Fall

Number of Fatalities
Figure 9

Services
2000

Motor Vehicle
Plane Crash
Firearm
Struck By/Against
Pedestrian
Fall

Number of Fatalities

Figure 10

Mining
2000

Machinery
Man Cart
Motor Vehicle
Explosion
Electrocution
Suffocation
Struck By/Against

Number of Fatalities
Figure 11

Public Administration

2000

- Motor Vehicle
- Firearm
- Struck By/Against

Number of Fatalities

Figure 12

Finance/Insurance/Real Estate

2000

- Plane Crash

Number of Fatalities
Figure 13

Wholesale Trade

2000

Motor Vehicle

Firearm

Number of Fatalities

Figure 14

Retail Trade

2000

Firearm

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


c 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

Operators/Fabricators/Laborers
2000

Number of Fatalities

Motor Vehicle
Machinery
Fall
Struck By/Against
Firearm
Drown/Submersion
Suffocation
Man Cart
Poisoning
Hyperthemia
Explosion
Electrocution
Figure 16

**Farming/Forestry/Fishing**

2000

![Bar chart showing number of fatalities by type of accident for Farming/Forestry/Fishing in 2000.](chart16)

- Machinery: 9 fatalities
- Struck By/Against: 8 fatalities
- Motor Vehicle: 3 fatalities
- Electrocution: 1 fatality
- Livestock: 1 fatality
- Fall: 1 fatality

Figure 17

**Precision Production/Craft/Repair**

2000

![Bar chart showing number of fatalities by type of accident for Precision Production/Craft/Repair in 2000.](chart17)

- Motor Vehicle: 4 fatalities
- Fall: 3 fatalities
- Struck By/Against: 2 fatalities
- Explosion: 2 fatalities
- Electrocution: 2 fatalities
- Suffocation: 1 fatality
- Poisoning: 1 fatality
- Machinery: 1 fatality
Figure 18

Technical/Sales/Administrative Support
2000

Figure 19

Managerial/Professional Specialty
2000
Figure 20

**Service**

2000

<table>
<thead>
<tr>
<th></th>
<th>Number of Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle</td>
<td>3</td>
</tr>
<tr>
<td>Firearm</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 21

**Military**

2000

<table>
<thead>
<tr>
<th></th>
<th>Number of Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Struck By/Against</td>
<td>1</td>
</tr>
<tr>
<td>Motor Vehicle</td>
<td>1</td>
</tr>
<tr>
<td>Firearm</td>
<td>1</td>
</tr>
</tbody>
</table>
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](image-url)
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

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

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

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

*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

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

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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Non-KY Residents</td>
<td>29</td>
<td>(100)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
<td>(93)</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>(7)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>20</td>
<td>(69)</td>
</tr>
<tr>
<td>Black</td>
<td>5</td>
<td>(17)</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>(10)</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>(3)</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCPU</td>
<td>11</td>
<td>(38)</td>
</tr>
<tr>
<td>Services</td>
<td>5</td>
<td>(18)</td>
</tr>
<tr>
<td>Finance/Insurance/Real Estate</td>
<td>4</td>
<td>(14)</td>
</tr>
<tr>
<td>Mining</td>
<td>3</td>
<td>(10)</td>
</tr>
<tr>
<td>Public Administration</td>
<td>3</td>
<td>(10)</td>
</tr>
<tr>
<td>Construction</td>
<td>2</td>
<td>(7)</td>
</tr>
<tr>
<td>Wholesale/Retail Trade</td>
<td>1</td>
<td>(3)</td>
</tr>
<tr>
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<tr>
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<tr>
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<tr>
<td>Struck By/Against</td>
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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.

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


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**

Office of the Federal Register, Washington, D.C.
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 Compicker

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  Farmer 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
16th 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 16th 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/specifcics 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
- 0.00 to 0.47
- 0.62 to 1.09
- 1.25 to 2.18
- 2.80 to 3.58
- 9.50

Total "on-the-job" fatalities = 641

5 = number of fatalities for each county

1996 - 2000 aggregate data