

# Kentucky FACE Program Annual Report

## 2006



**KENTUCKY INJURY PREVENTION AND RESEARCH CENTER**

## Cooperative Agreement Number 5 U60 OH008483-03

The Kentucky Fatality Assessment and Control Evaluation (KY FACE) Program is an occupational fatality surveillance project of the Kentucky Injury Prevention and Research Center (KIPRC)\*. The goal of KY FACE is to prevent fatal work injuries by studying the worker, the work environment, the tools used, the energy exchange resulting in fatal injury, and the role of management in controlling the interaction of these factors. KY FACE investigators evaluate information from multiple sources including interviews of employers, coworkers, witnesses and other investigators; examination of the fatality site and equipment; and review of records such as Occupational Safety and Health Administration (OSHA), police, and medical examiner reports; and employer safety procedures. The FACE program does not seek to determine fault or place blame on companies or individual workers. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future.

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\*Organizationally, KIPRC is part of the University of Kentucky, College of Public Health. KIPRC is the bona fide agent of 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 the Kentucky Department for Public Health.

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## EXECUTIVE SUMMARY

KY FACE staff recorded 138 occupational fatalities for 2006. The following criteria were established by NIOSH in order for a 2006 fatal work-related incident to be eligible for a field investigation. The criteria were: youth fatalities (<18 years of age), highway work zone deaths, fatal machinery-related incidents, and fatalities of immigrant workers. Kentucky-specific criteria include fatal construction and trucking injuries.

The following are significant findings of this annual report:

- 1. Kentucky FACE recorded 138 work-related fatalities in 2006; 23 of the fatalities were due to one incident, the Comair airplane crash in August, 2006.**
- 2. Kentucky's occupational fatality rate is 85% above the national rate (7.2 Kentucky worker deaths/100,000 workers compared to 3.9 US worker deaths/100,000 workers). If the Comair plane crash incident is excluded, the KY fatality rate is 6.0/100,000 workers, 54% above the national rate.**
- 3. The most frequent fatal occupational incidents occurred in the Services sector (22%).**
- 4. Twenty-seven percent of all work-related deaths were due to motor vehicle collisions and 46% of all working drivers were NOT wearing their seat belts when the fatal injury occurred. Semi/tractor-trailers accounted for 31% of the occupational MVCs. Forty-one percent of all occupational motor vehicle collisions occurred on interstate highways.**
- 5. There were 26 construction industry fatalities in Kentucky in 2006 and deaths occurred most frequently in laborers.**
- 6. More workers in the Transportation and Materials Moving occupations (25%) died in fatal work-related incidents than in any other individual occupations.**
- 7. In 2006, there was a sum of 2623 Years of Potential Life Lost (YPLL) due to occupational fatalities in the state of Kentucky.**
- 8. The Farming/Fishing/Forestry occupational group had the highest fatality rate (133 deaths/ 100,000 workers in Kentucky compared to the US rate of 29.2 deaths/ per 100,000 workers).**

## *INVESTIGATION PROGRAM*

The KY FACE Program completed two on-site investigations of selected occupational fatalities. The reports that were released in 2006 included one crushing incident, and one motor vehicle collision (MVC) related incident.

**Case 1:** On April 13, 2005, a 40-year-old male laborer was moving a 5-foot by 9-inch coil of slitted steel, weighing 6600 pounds, when it fell on him. The laborer was in the process of wrapping a chain through the middle of the coil and through a homemade device on the forks of a forklift when the coil tipped over. As the laborer tried to move away from the falling coil, it landed on his left side, breaking his left leg and causing internal injuries. Other workers in the area did not see, but heard the commotion of the falling coil. The plant manager and other workers rushed to aid the laborer who was conscious. They tried to lift the coil of steel off the laborer's leg, but could not. While one of the workers called emergency services, another used a forklift to remove the coil from the laborer's legs. Cognizant and using a cell phone, the laborer spoke to his wife while he was waiting for emergency management service personnel to arrive. Emergency personnel arrived and he told them that he was hurting and to get him to a hospital. The laborer was taken by ambulance to the closest hospital in a neighboring state where he died that same day from internal injuries.

**Case 2:** On November 8, 2005, a 26-year-old male laborer who was a passenger in a semi-truck died when the driver swerved to avoid hitting a cow that was standing in the parkway lane. The two employees had been traveling westbound for approximately one hour when the driver noticed a cow in his lane. He swerved to avoid hitting the cow but hit it anyway. The tractor and two trailers jack-knifed, traveled through the median with the cab and trailers flipped onto their right sides, slid across the eastbound lanes, then the cab slammed through the guardrail. The cab came to rest on the steep embankment of the shoulder. A passing motorist called emergency services. Emergency personnel arrived, climbed down the steep embankment and found the top of the cab crushed. Both driver and passenger were thought to be alive. However, because of the steep slope and the condition of the cab, rescue personnel could not administer first aid to the two men in the cab. Tow trucks were called to the scene to move the two trailers and pull the cab up the slope and onto the pavement. Using torches, rescuers cut away the metal of the cab to reach the two men. Both men were wearing seatbelts which needed to be cut in order to free them. Emergency personnel assessed both men. The driver was found to be alive and was transported to the nearest hospital. However, the passenger did not have vital signs. The local coroner was contacted; he arrived and declared the passenger dead at the scene.

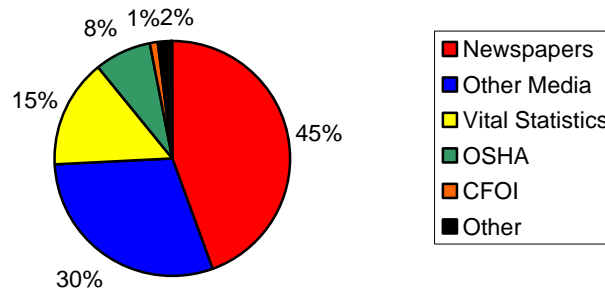
## *QUANTITATIVE ANALYSIS*

The KY FACE Program identified 138 fatal occupational injuries that occurred during 2006, compared to 121 recorded in 2005. The following section provides a descriptive analysis of the 2006 KY FACE data.

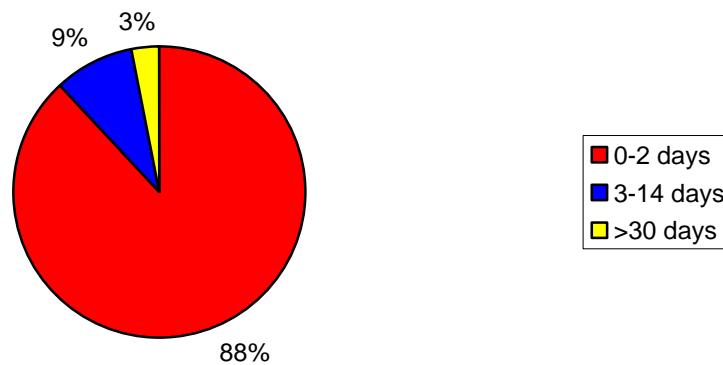
## Identification of Cases

The primary source of identification for cases was newspapers (45%) (Figure 1). The KY FACE Program was informed of 88% of the occupational fatality cases within two days of the fatality and was notified regarding 73% of the cases within 30 days or less of the fatality (Figure 2).

**Figure 1. Sources of Identification – 2006.**



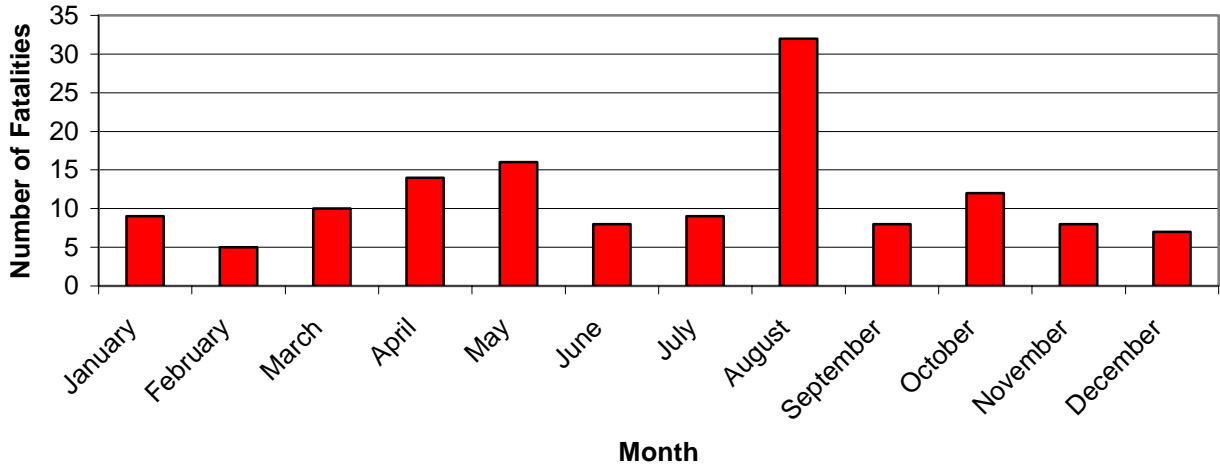
**Figure 2. Time Between Occupational Fatality and Initial Notification – 2006.**



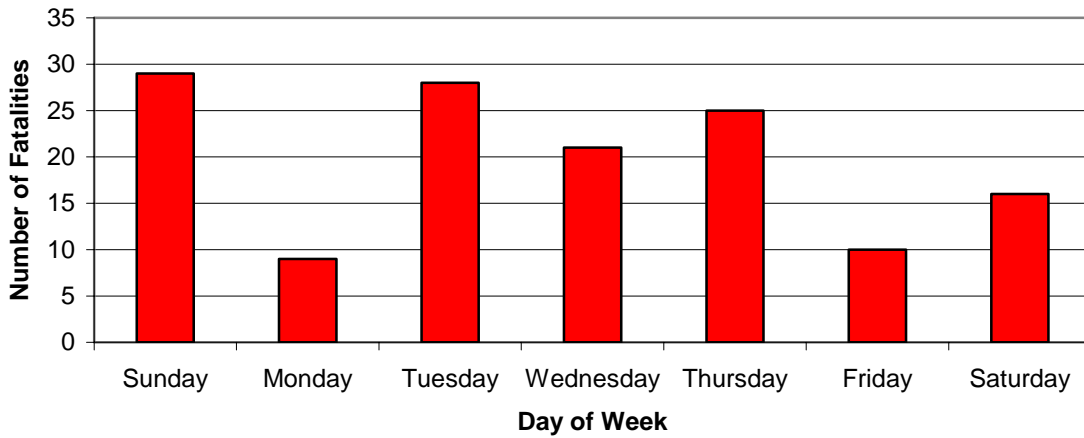
The month in which the most work-related fatalities occurred was August (n = 32), due to the Comair plane crash on August 27, 2006. The lowest number of occupational fatalities during 2006 occurred during the month of February (n = 5). The day of the week in which the most fatal occupational incidents occurred in 2006 was Sunday (n = 29) and the fewest work-related fatal incidents occurred on Monday (n = 9).



**Figure 3. Kentucky Occupational Fatalities by Month – 2006.**



**Figure 4. Occupational Fatality Incidents by Day of Week – 2006.**



Most occupational fatalities occurred between the hours of 6am and 9:59am and the fewest number of fatalities were recorded between 6pm to 5:59 am (Figure 5).

**Figure 5. Fatal Occupational Incidents by Time of Day – 2006.**

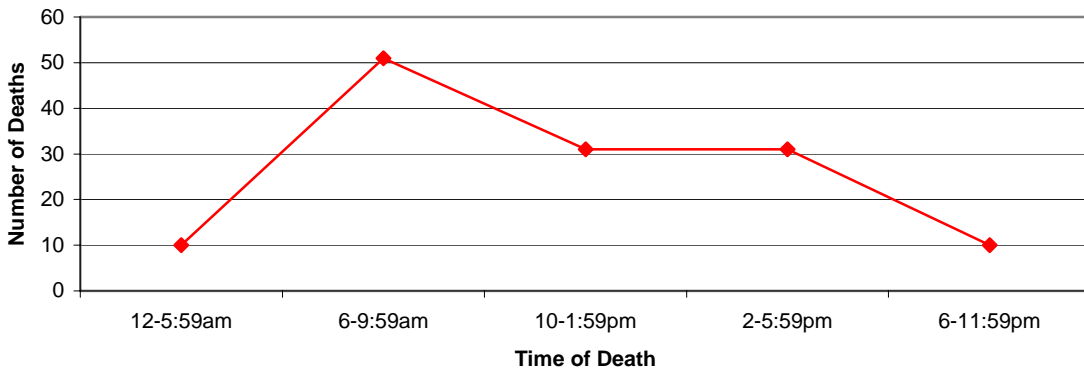
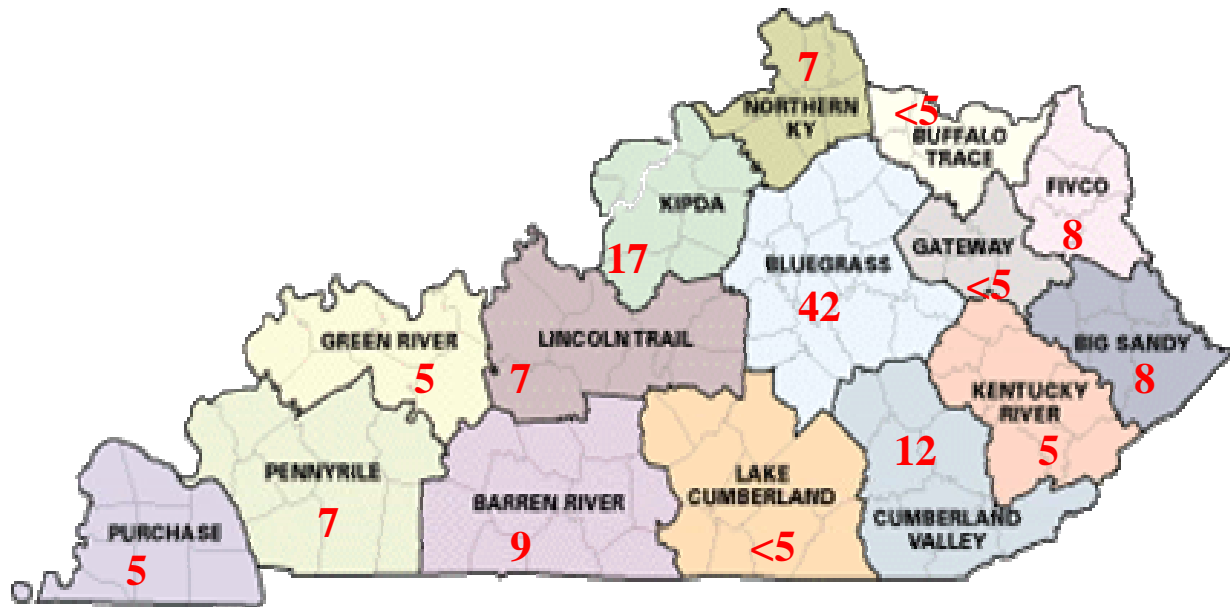


Figure 6 depicts the Commonwealth of Kentucky as Area Development Districts (ADD). ADD's are defined as partnerships of local governments and these partnerships provide for planned growth within the area. KY FACE recorded the most 2006 occupational fatalities within the Bluegrass ADD (n = 42), followed by the KIPDA District (n = 17) and the Cumberland Valley ADD (n = 12). The fewest number of work-related fatal incidents occurred in the Gateway ADD.

**Figure 6. Occupational Fatality Incidents per Area Development District (ADD) – 2006.**



Fifty-seven counties of Kentucky's 120 counties had at least one fatal occupational incident occur within its borders in 2006. The county with the highest number fatal work-related incidents was Fayette County (n = 27), followed by Jefferson County (n = 13). Table 1 shows the fatality rate per 100,000 workers for the three counties with the highest number of fatalities (employment estimates are used).

**Table 1. Fatality Rates for Counties with the Greatest Frequency of Fatal Occupational Incidents – 2006.**

County	Fatalities	Employment <sup>a</sup>	Fatality Rate per 100,000 Workers
Fayette	27	142,864	18.9
Jefferson	13	339,832	3.8
Harlan	6	9,408	63.8
<b>Total KY</b>	<b>138</b>	<b>1,922,163</b>	<b>7.2</b>

<sup>a</sup>State and county employment estimates are from the 2006 Kentucky Deskbook of Economic Statistics. Kentucky Cabinet for Economic Development, Division of Research; Frankfort, KY.

## Demographics

Table 2 depicts the demographic characteristics of workers who were fatally injured on the job in 2006. The ages of the workers involved in occupational fatalities ranged from 19 years of age to 86 years of age; 23% of the fatal incidents involved out-of-state residents.

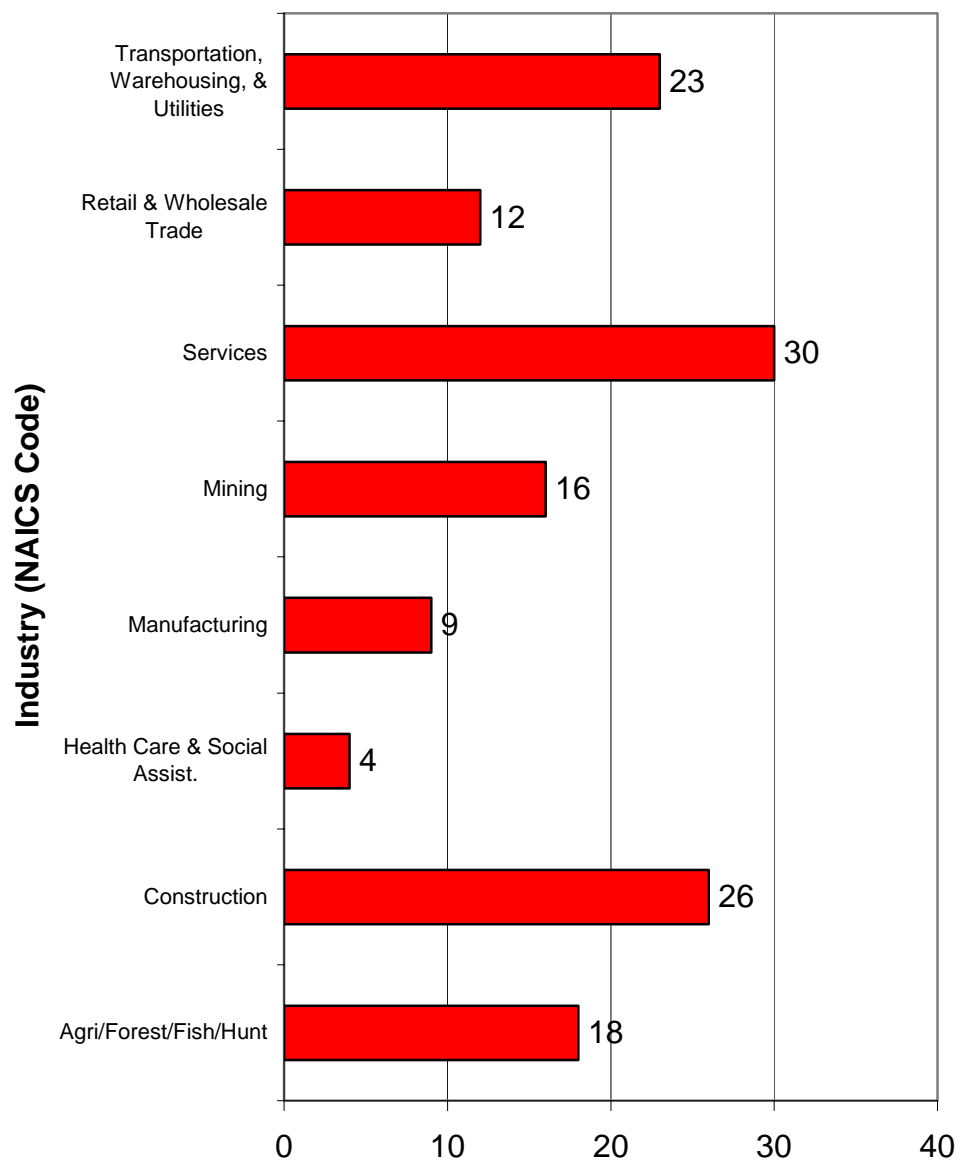
**Table 2. Demographic Characteristics of Fatally Injured Workers – 2006.**

<b>Characteristics</b>	<b>Number</b>	<b>Percent</b>
<b>Total Fatalities</b>	138	100
<b><u>Sex</u></b>		
<b>Male</b>	129	93
<b>Female</b>	9	7
<b><u>Race</u></b>		
<b>White</b>	112	81
<b>Black</b>	6	4
<b>Other</b>	9	7
<b><u>Age</u></b>		
<b>&lt;20</b>	1	1
<b>20-29</b>	15	11
<b>30-39</b>	29	21
<b>40-49</b>	39	28
<b>50-59</b>	29	21
<b>60-69</b>	22	16
<b>70-79</b>	2	1
<b>80-89</b>	1	1
<b><u>Marital Status</u></b>		
<b>Never married</b>	22	16
<b>Married</b>	80	58
<b>Divorced</b>	22	16
<b>Widowed</b>	4	3
<b><u>Education</u></b>		
<b>Less than high school</b>	8	6
<b>Some high school</b>	15	11
<b>Finished High School</b>	59	43
<b>Some College</b>	24	17
<b>College Graduate</b>	18	13
<b><u>Country of Origin</u></b>		
<b>United States</b>	123	89
<b>Mexico</b>	2	1
<b>Canada</b>	1	1
<b>Other</b>	3	2
<b>Unknown</b>	9	7
<b><u>Primary Language</u></b>		
<b>English</b>	125	91
<b>Spanish</b>	6	4
<b>Other</b>	2	1
<b><u>State of Residence</u></b>		
<b>Kentucky</b>	104	77
<b>Indiana</b>	4	3
<b>Ohio</b>	7	5
<b>Tennessee</b>	3	2
<b>West Virginia</b>	1	1
<b>Other</b>	16	12

## Industry Sector

Figure 7 and Table 3 depict the number of workers that were fatally injured in each industry (as classified by the *North American Industry Classification System (NAICS)* grouped into NIOSH National Occupational Research Agenda [NORA] sectors). Table 3 also shows a comparison of state and national occupational fatality rates. The Services industry sector recorded most of the work-related deaths in Kentucky in 2006 (n = 30, 22% of total fatalities). The highest fatality rates were in the Mining industry (71.3 deaths /100,000 employees), the Agriculture/ Forestry/ Fishing industry (51.7/100,000), the Construction industry (31.3/100,000), and the Transportation, Warehousing, and Utilities industry (27.3/100,000).

**Figure 7. Occupational Fatalities by Industry Sector – 2006.**



**Table 3. Occupational Fatalities by Major Industry Sectors (NORA sectors) – 2006.**  
(Rates calculated per 100,000 workers<sup>a</sup>).

Industry	# of KY Deaths	KY Employment	2006 KY Fatality Rate	2006 US Fatality Rate <sup>b</sup>
Agriculture/Forestry/Fishing	18	34,792	51.7	29.6
Construction	26	83,064	31.3	10.8
Health Care & Social Assistance	4	224,193	1.8	0.7 <sup>c</sup>
Manufacturing	9	260,915	3.4	2.7
Mining	16	22,429	71.3	49.5
Services	30	700,066	4.3	2.2 <sup>c</sup>
Retail & Wholesale Trade	12	293,435	4.1	2.8 <sup>c</sup>
Transportation, Warehousing & Utilities	23	84,154	27.3	13.1 <sup>c</sup>
<b>Total</b>	<b>138</b>	<b>1,922,163</b>	<b>7.2</b>	<b>3.9</b>

<sup>a</sup>Number of employed persons obtained from the Kentucky Deskbook of Economic Statistics, 2005 Kentucky county business patterns, Bureau of Labor Statistics.

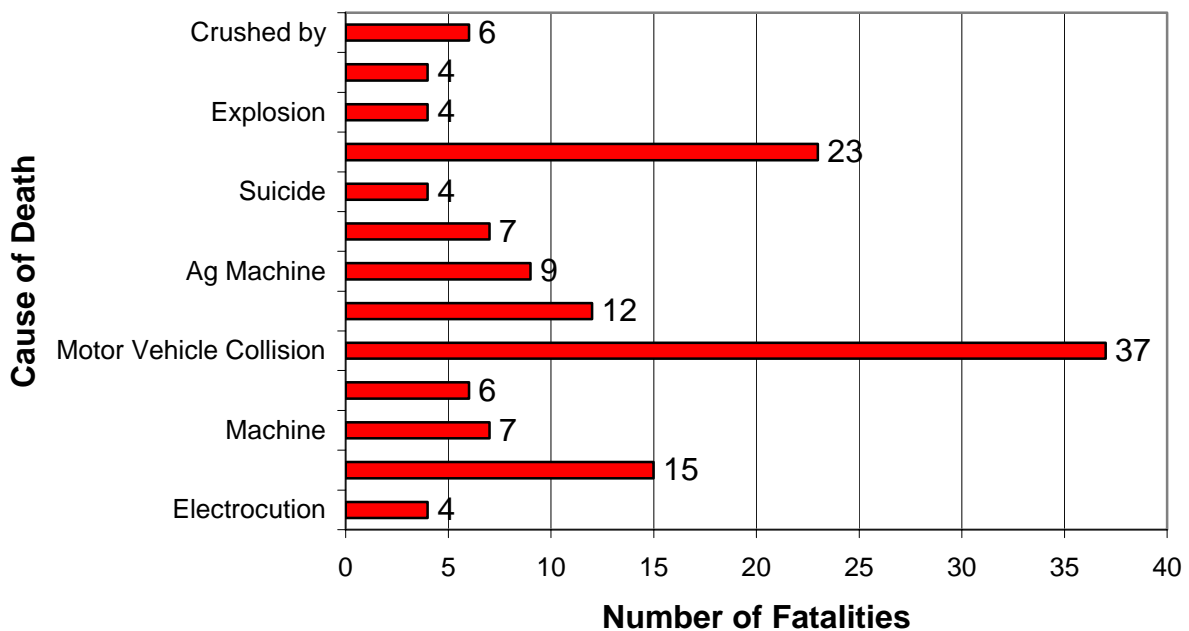
<sup>b</sup>Census of Fatal Occupational Injuries Summary. US Dept. of Labor, BLS, National CFOI in 2006.

<sup>c</sup>MMWR, April 6, 2007 / 56(13);297-301

### External Cause of Death

Motor vehicle collisions (MVCs) were the leading cause of occupational fatalities (n = 37, 27%) in 2006 (Figure 8). The second leading cause of worker death was due to air/space transport (n = 23, 17%), and falls were the third major cause of fatal occupational incidents (n=15, 11%). Ag machine-related fatalities (n = 9) accounted for 7% of the worker deaths.

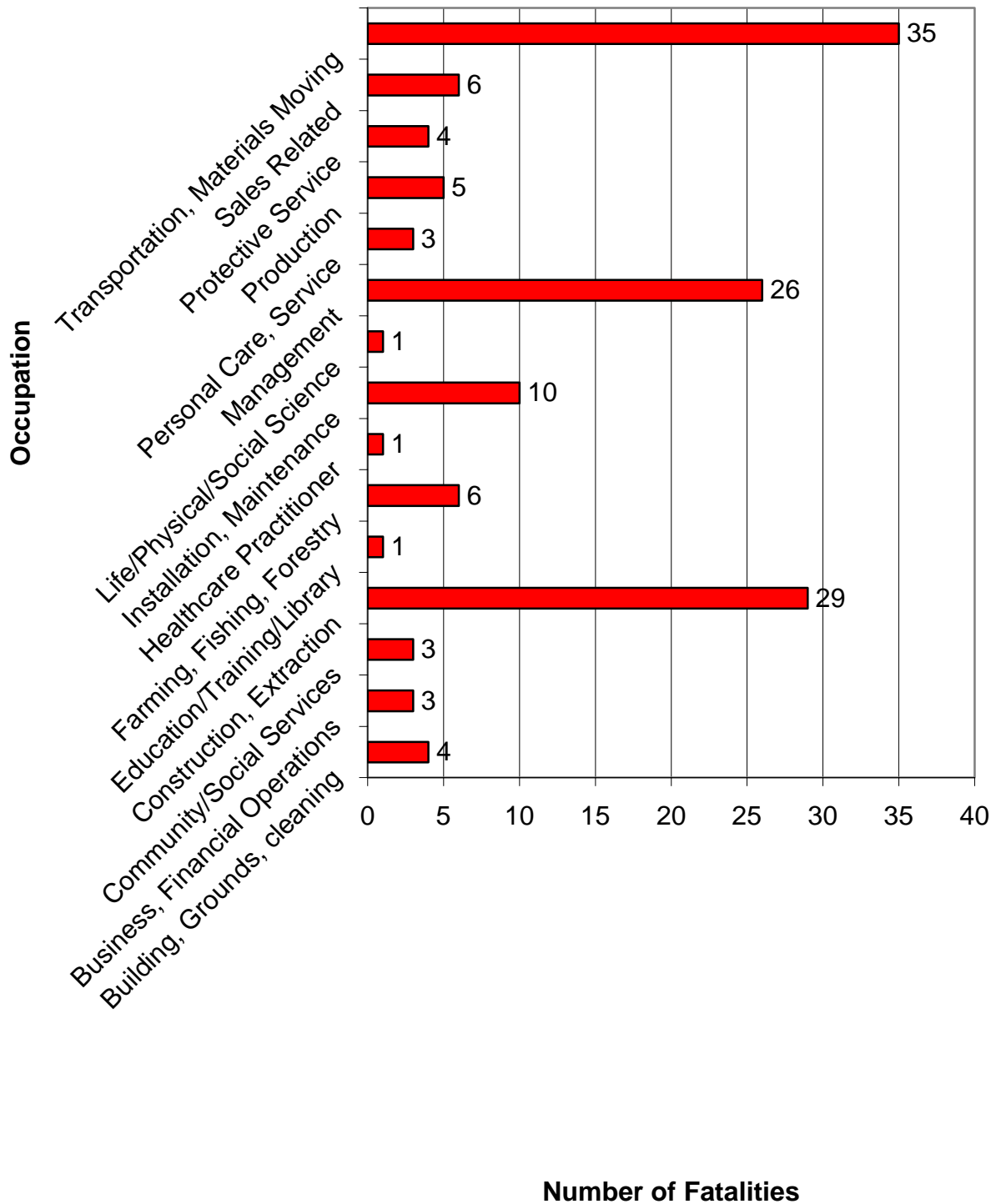
**Figure 8. Occupational Fatalities by Incident Type – 2006.**



## Occupation

The Transportation/Materials Moving occupation accounted for 25% of occupational deaths and the Farming/Fishing/Forestry occupational class had the highest fatality rate (Table 4) (Figure 9).

**Figure 9. Work-Related Fatalities by Occupation (SOC) – 2006.**



**Table 4. Work-Related Fatalities by Major Occupational Classification – 2006.**

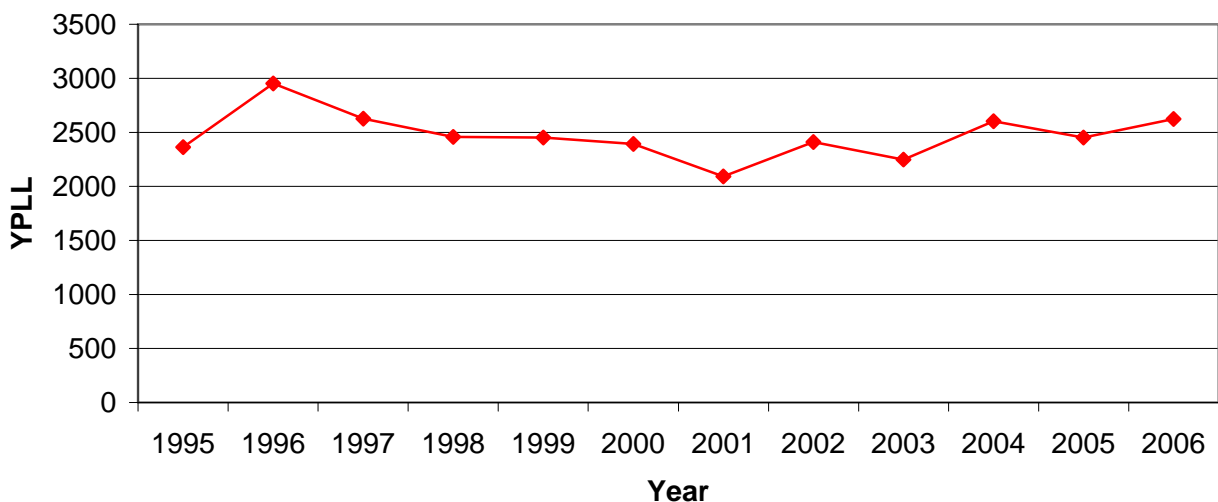
Occupational Classification	Number (%)	# Employed in KY	2005 KY Rate	2005 US Rate <sup>a</sup>
Architecture/engineering	1 (1%)	22,110	4.5	2.2
Building, Grounds Cleaning	4 (3%)	52,760	7.6	6.3
Business/ Financial Operations	3 (2%)	52,270	5.7	0.7
Community/ Social Services	3 (2%)	21,300	14.1	1.8
Construction, Extraction	29 (21%)	84,710	34.2	13.2
Education/ Training/Library	1 (1%)	107,220	0.9	0.3
Farming, Fishing, Forestry	6 (4%)	4,510	133.0	29.2
Healthcare Practitioner	1 (1%)	101,600	1.0	0.8
Installation, Maintenance	10 (7%)	79,610	12.6	7.7
Life/ Physical/ Social Science	1 (1%)	10,350	9.7	2.0
Management	26 (19%)	77,480	33.6	2.7
Personal Care Service	3 (2%)	37,090	8.1	1.7
Production	5 (4%)	209,360	2.4	3.0
Protective Service	4 (3%)	35,590	11.2	9.1
Sales Related	6 (4%)	180,770	3.3	1.9
Transportation, Material Moving	35 (25%)	158,120	22.1	16.5

<sup>a</sup>Employment figures obtained from *Census of Fatal Occupational Injuries – 2005 data*, US Department of Labor, Bureau of Labor Statistics, Washington, DC 20212-0001. Rates were calculated as the number of occupational fatalities per 100,000 workers.

### Years of Potential Life Lost (YPLL)

Figure 10 represents the total YPLL for the years 1995 – 2006. In 2006, the total YPLL for 138 workers who were fatally injured was 2623. YPLL is calculated as the age of the worker at the time of death, subtracted from the average lifespan. The age of 65 is representative of a “lifespan” for the purposes of this analysis.

**Figure 10. Total Years of Potential Life Lost (YPLL) in Kentucky, 1995-2006.**



The industries with the highest average YPLL were in the Mining, Manufacturing, and Construction industries (Table 5). These results indicate that workers in these industries are being fatally injured at a younger age. The Construction industry sector had the highest total YPLL, which indicates the loss of potential employment and future lost productivity was highest for this industrial group (\$22.3 million dollars). Table 6 shows that future lost earnings could total as much \$101.9 million dollars due to these work-related fatalities. Those industries with future losses of greater than \$10 million dollars are the Mining industry, the Transportation and Warehousing industry, the Construction industry, and the Services industry.

**Table 5. Total and Average YPLL by Industry Sector – 2006.**

<b>Industry Classification</b>	<b>Total Fatalities</b>	<b>2006 Total YPLL</b>	<b>Average YPLL per Fatality</b>
Agriculture, Forestry, and Fishing	18	128	7.1
Mining	16	396	24.7
Transportation, Warehousing, and Utilities	23	419	18.2
Construction	26	597	23
Manufacturing	9	203	22.5
Healthcare & Social Assistance	4	30	7.5
Services	30	573	19.1
Wholesale and Retail Trade	12	277	23.1

**Table 6. Future Lost Wages (by Industry Sector) Due to Work-Related Fatalities – 2006.**

<b>Industry Classification</b>	<b>Average Salary<sup>a</sup></b>	<b>Total Earnings Lost (in millions)</b>	<b>% of Total</b>
Agriculture, Forestry, and Fishing	\$47,112	\$6.0	6%
Mining	\$55,677	\$22.0	22%
Transportation and Warehousing <sup>b</sup>	\$44,252	\$18.5	18%
Construction	\$37,309	\$22.3	22%
Manufacturing	\$45,434	\$9.2	9%
Healthcare & Social Assistance	\$56,524	\$1.7	2%
Services	\$29,119	\$16.7	16%
Retail Trade <sup>c</sup>	\$19,864	\$5.5	5%
<b>Total</b>		<b>\$101.9</b>	<b>100%</b>

<sup>a</sup>Average Salaries from Kentucky Cabinet for Workforce Development.

<sup>b</sup>Transportation and warehousing only. Utilities not included.

<sup>c</sup>Retail trade only. Wholesale trade not included.

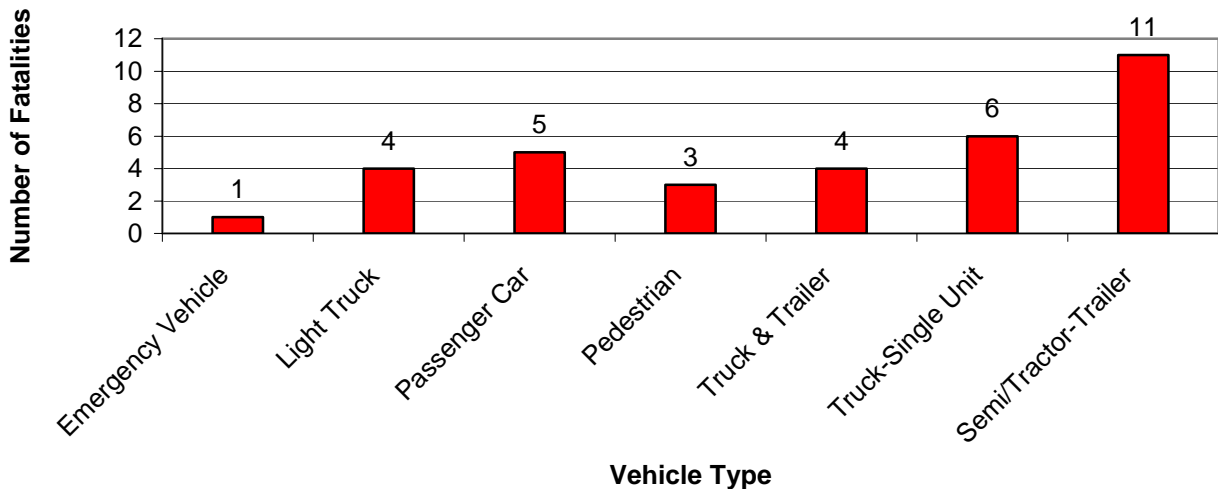


## SPECIAL TOPICS

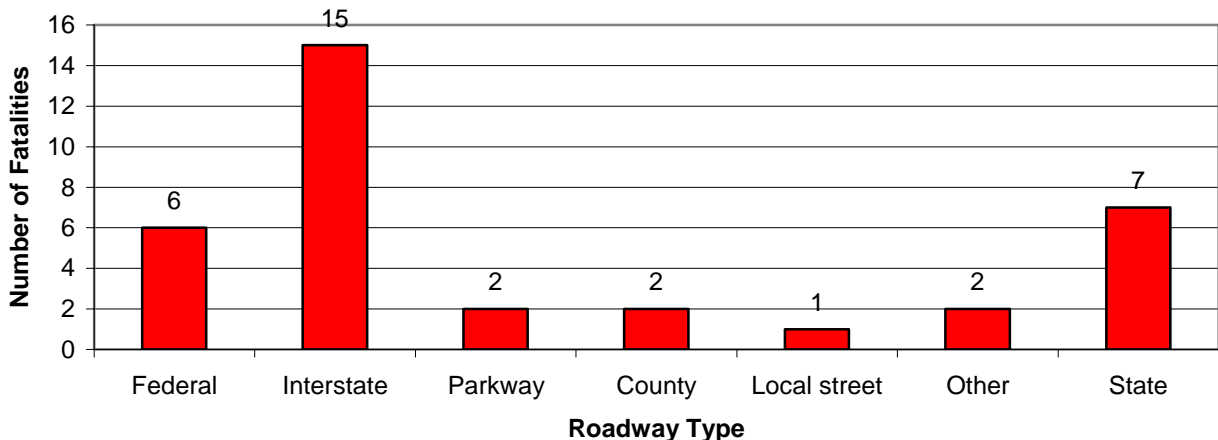
### Motor Vehicle Collisions

Motor vehicle collisions (MVCs) were the leading cause of occupational fatalities in 2006 (Figures 11-12). Thirty-seven of the 138 work-related deaths in 2006 were due to MVCs (27%). Semi/tractor-trailers accounted for 31% of the occupational MVCs and 41% occurred on an interstate highway; two occurred off-road. Of note, forty-six percent of the occupational drivers who died in a MVC were NOT wearing a seat belt when the fatal incident occurred.

**Figure 11. Motor Vehicle Collisions by Vehicle Type – 2006.**



**Figure 12. Type of Roadway Where Motor Vehicle Collision Occurred – 2006.**

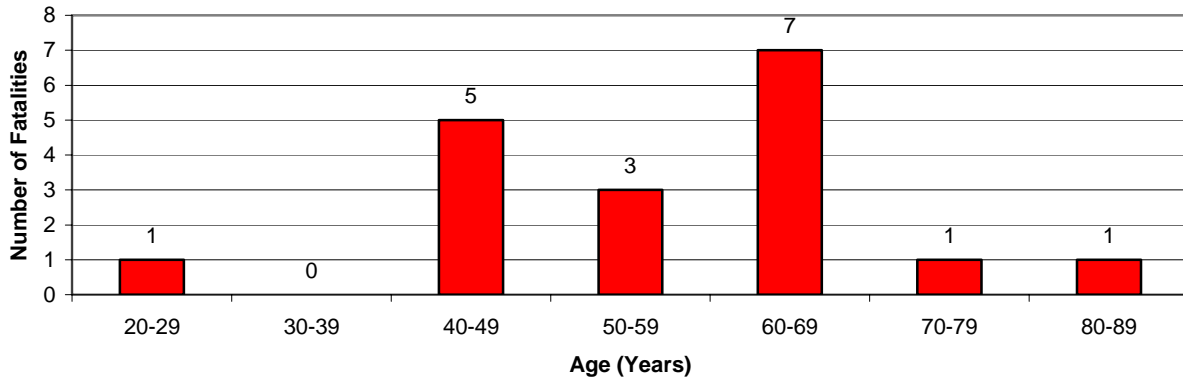


### Agricultural Industry Occupational Fatalities

During 2006, 18 of the 138 occupational fatalities that were recorded by the KY FACE Program occurred within the Agriculture/Forestry/Fishing industry (NAICS). There were no logging

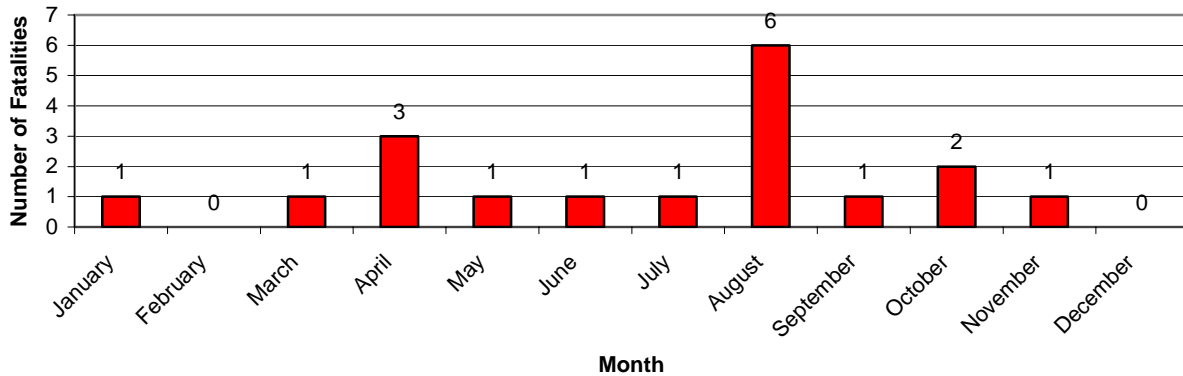
fatalities recorded. Figure 13 represents the fatally injured workers' ages at their time of death.

**Figure 13. Age of Agricultural Industry Worker at Death – 2006.**

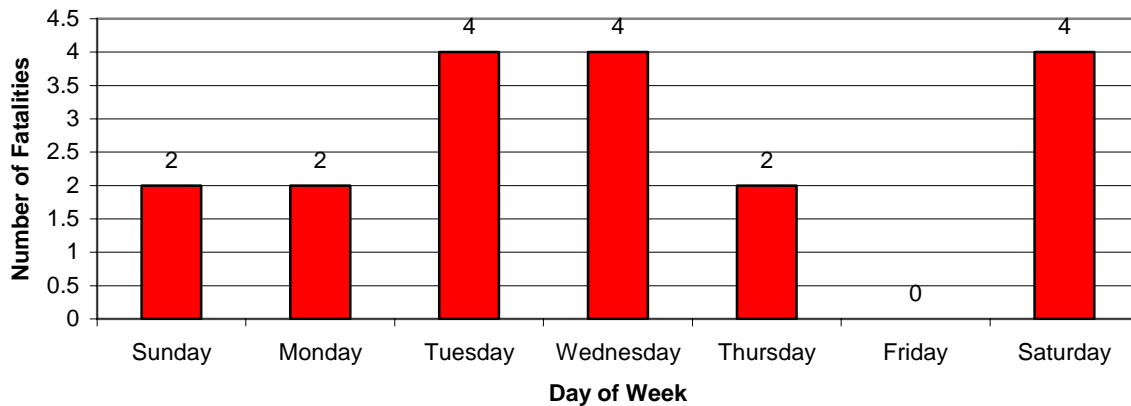


In the Agricultural industry, more workers died in the month of August (Figure 14) than in other months, and more workers died on a Tuesday, Wednesday or Saturday than any other days of the week (Figure 15).

**Figure 14. Month of Agricultural Industry Worker Death – 2006.**

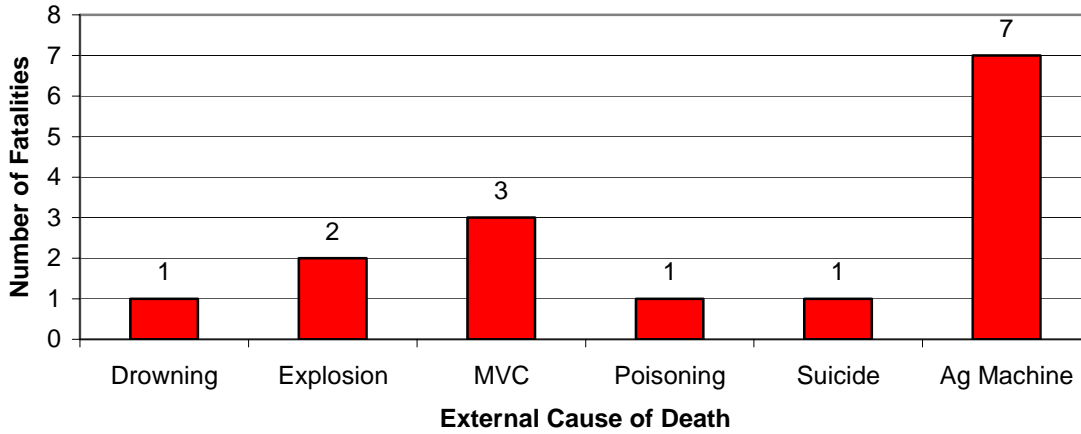


**Figure 15. Day of Fatal Incident for Agricultural Industry Workers – 2006.**



The leading causes of death for these workers were incidents involving agricultural machinery (n = 7) and motor vehicle collisions (n = 3) (Figure 16).

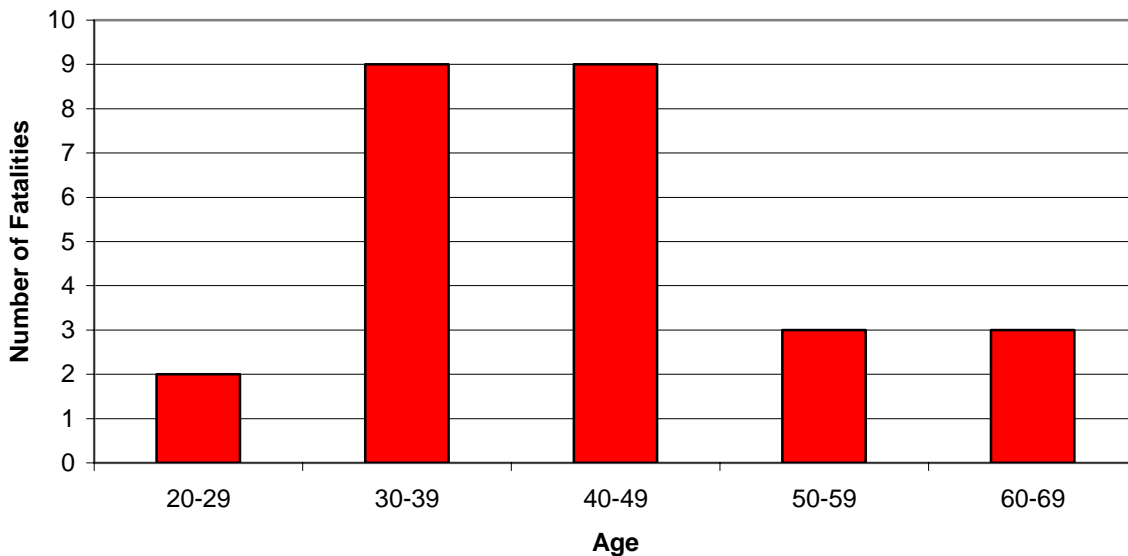
**Figure 16. External Cause of Death for Agricultural Industry Workers – 2006.**



### Construction Industry Fatalities

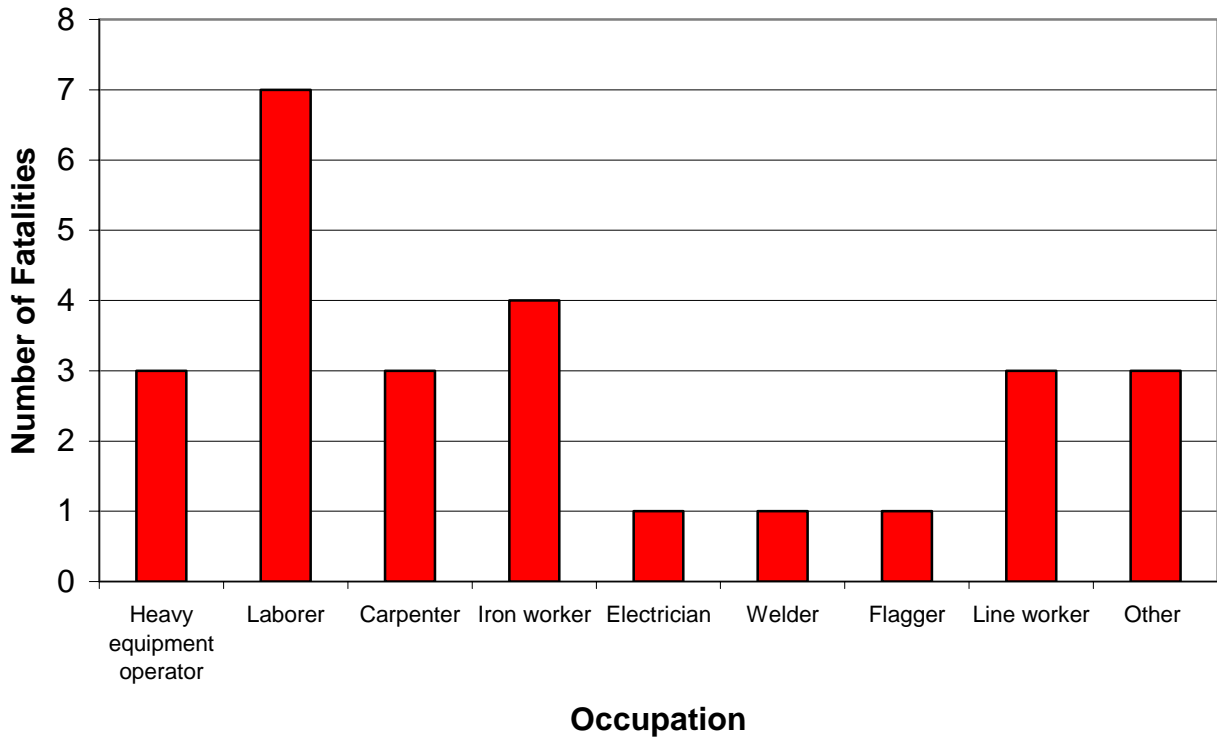
There were 26 construction fatalities in the year 2006. Ages of the construction victims are shown in Figure 17.

**Figure 17. Construction Industry Fatalities by Age, 2006.**



The construction workers who were killed on the job were most frequently employed as laborers (Figure 18).

**Figure 18. Construction Industry Fatalities by Occupation, 2006.**



Below are the narratives for each of the construction industry fatalities:

Narrative #1: The victim was working on a crane while using another crane to hold the boom. The boom of the crane being worked on fell and crushed the victim.

Narrative #2: The victim was replacing power lines. The victim climbed a pole and grabbed a wire he thought was de-energized. The wrong fuse had been pulled and power was still on. The victim was electrocuted and fell 30 feet when he touched the wire.

Narrative #3: The victim was removing a piece of angle iron from inside a tank used to store clay material. The victim struck the angle iron causing the clay attached to the inside of the tank to fall on the victim.

Narrative #4: The victim entered an unprotected trench to lay pipes on a work site that was approximately ten feet deep. A trench box, a device used to protect workers from cave-ins, was not in place, but there was one on-site. The trench caved in and the victim died of compression fractures.

Narrative #5: The victim was working at a construction site and was standing on the fourth rung of a stepladder handing tools up to a framer. The victim fell and hit his head. Surgery was

performed on the victim the day of the incident but the victim died several days later.

Narrative #6: The victim was holding a concrete pump boom hose on an unprotected balcony, forty feet above the ground, when the hose jerked throwing the victim to the ground below. The victim was transported to a hospital and was pronounced dead.

Narrative #7: The victim fell approximately 30 feet from a building onto the concrete below while framing a residence, and died almost 24 hours later.

Narrative #8: The victim fell approximately 380 feet from a tower.

Narrative #9: The victim was painting a building from the roof using a six foot metal paint roller. The victim came in contact with overhead power lines and was electrocuted.

Narrative #10: The victim was using a forklift to transport roof trusses and was struck by one of the roof trusses as it fell from the forklift.

Narrative #11: The victim fell from a ladder, striking his head on the ground below.

Narrative #12: The victim was struck by a vehicle while working as a flagman at a road project. At the time the victim was shoveling gravel off the road.

Narrative #13: The victim was on a mechanical lift when caught between a metal cable tray and a handrail on a platform. The victim suffered from mechanical asphyxia and blunt force trauma.

Narrative #14 and #15: The victims, subcontractors, were tack-welding roof panels when one came loose causing the victims to fall approximately 80 feet. The victims were pronounced dead at the scene.

Narrative #16: The victim was clearing timber for a pipeline company when he lost control of the bulldozer and the bulldozer overturned.

Narrative #17: The victim was removing tin from the back of a metal building under renovation and was working from a 12 foot mobile scaffold when the scaffold was moved, and the victim fell and struck his head on the ground.

Narrative #18: The victim was removing the cap from a pressurized tank used to sandblast a water tower, but due to the high pressure of the tank, the cap struck the victim in the head.

Narrative #19: The victim was struck by a construction truck at a work site on a public roadway where he was working to replace worn concrete.

Narrative #20: The victim was working from the basket of an aerial lift when the victim came in contact with overhead power lines and was electrocuted.

Narrative #21: The victim was a flagman for a construction company and was struck and killed

by a car. The victim was hit while in the roadway on a state highway.

Narrative #22: The victim was on a commercial roof alone when the victim fell about 30-40 feet.

Narrative #23: The victim was found by his truck with a gun shot wound to the head.

Narrative #24: The victim was working when he was involved in a MVC in which the truck overturned.

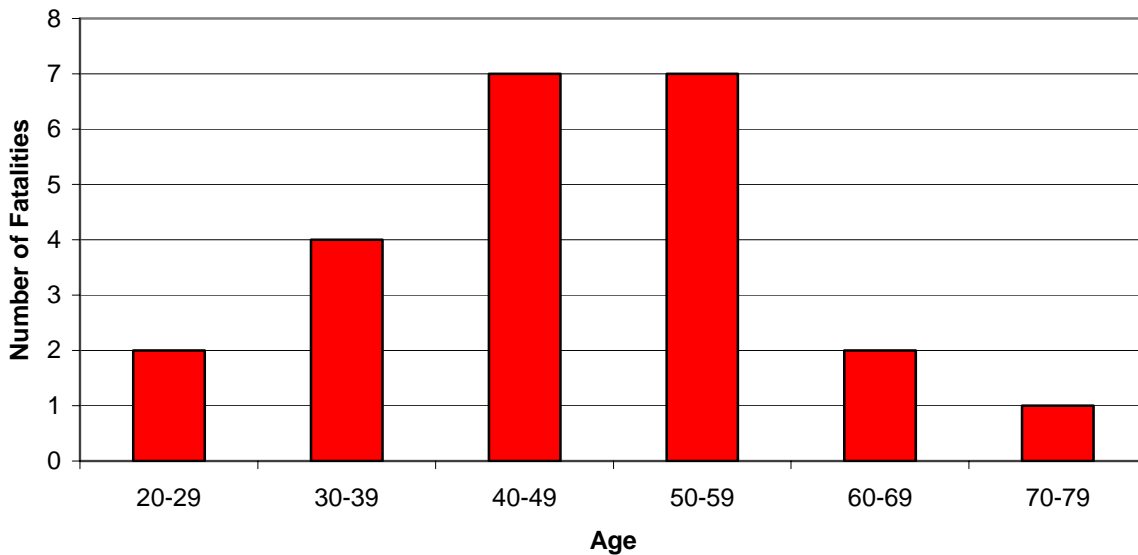
Narrative #25: The victim was covering a section of water line and was backing up when the victim got too close to the edge and the backhoe he was driving overturned.

Narrative #26: The victim fell from height.

### Transportation, Warehousing and Utilities Industry Fatalities

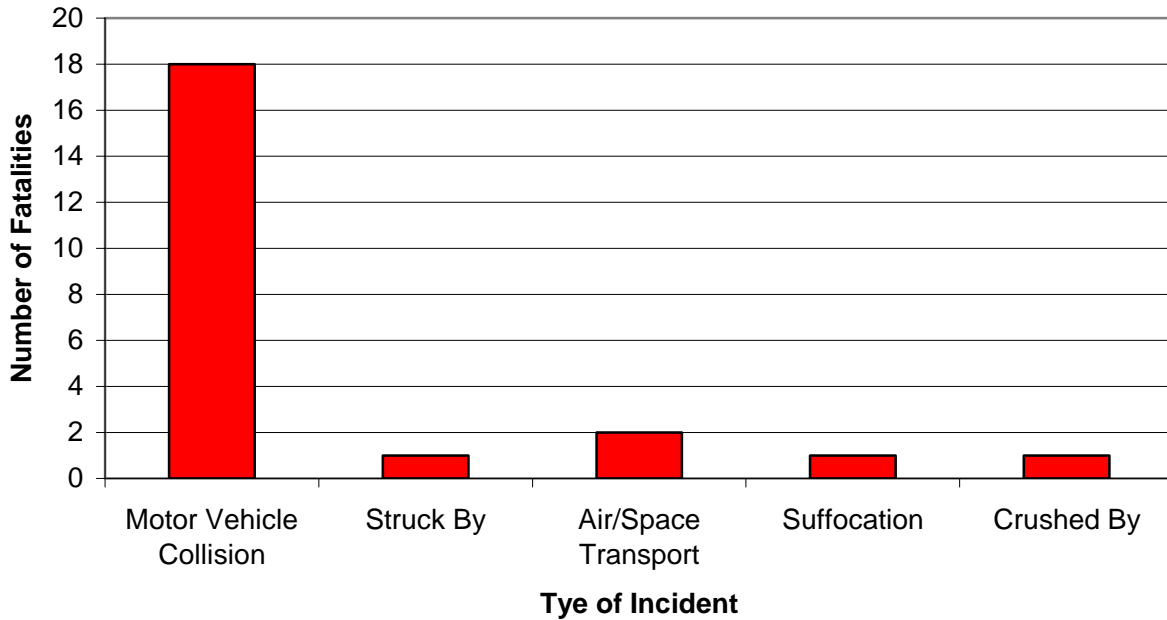
In 2006, there were 23 transportation industry fatalities. Twenty of the decedents were employed as truck drivers, one was a pilot, and one was a flight attendant. Most of the decedents were between the ages of 40 and 59 (Figure 19).

**Figure 19. Transportation Industry Fatalities by Age, 2006.**



Most of the decedents were involved in a motor vehicle collision (Figure 20).

**Figure 20. Transportation Industry Fatalities by Type of Incident, 2006.**



### **CONCLUSION**

The Kentucky worker fatality rate has decreased from 9 deaths/ 100,000 workers in 1994 to 6.0 worker deaths/ 100,000 workers in 2006 (excluding the Comair plane crash). Further targeted intervention strategies and approaches are needed in high-risk industries and occupations such as Mining, Transportation, Construction, and Agriculture for the identification and characterization of new and emerging risk factors which contribute to occupational fatalities. Since motor vehicle collisions are the leading cause of worker deaths, prevention control efforts will continue to be developed and implemented to reduce the number of occupational fatalities due to motor vehicle collisions in Kentucky.