

Executive Summary

A Review of Logging Fatalities Investigated
by the Occupational Safety and Health
Administration in FY 1996 and FY 1997

Parts 1 and 2

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Administration in FY 1996 and FY 1997

Part 1

Executive Summary

II. HIGHLIGHTS ❖❖

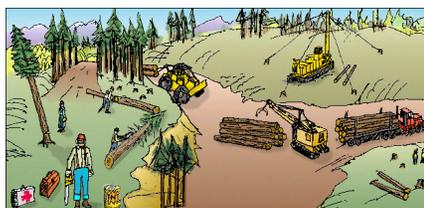
This Executive Summary highlights the results of the review of 107 case files of logging fatalities investigated by OSHA in FY 1996 and FY 1997 -- 51 investigations by states operating comprehensive OSHA-approved safety and health programs, and 56 investigations by Federal OSHA. The complete review is provided in section VI of the full Logging Report, pages 12-47, the Appendix and the Addendum. The statements that follow reflect the results of the review of seven groups of data or information: (1) the number of OSHA-investigated fatalities, (2) the location of the fatalities, (3) the time frames of the fatal incidents, (4) the age of the victims, (5) the number and classification of identified violations, (6) the assessed penalty amounts, and (7) the size of the establishments of the fatal incidents and the rate of fatalities.

- A. The number of onsite logging fatalities investigated by OSHA declined from FY 1996 to FY 1997, the scope of this review. This decline (22%), from 66 fatalities in FY 1996 to 51 fatalities in FY 1997, was the same when looking at investigations over a 10-year period (FY 1988 - FY 1997). **See Figure 1**, page 1.
- B. The number of fatal occupational logging injuries reported by the Bureau of Labor Statistics (BLS) also declined, from 156 fatal incidents in CY 1996 to 136 in CY 1997, a 13% change. Overall industry employment declined as well, going from 85,892 employees in CY 1996 to 83,473 employees in CY 1997, 3 percent change. **See Figure 2**, page 2.
- C. Based on data represented in an American Pulpwood Association report, the number of fatal logging incidents in the United States increased 2 percent from CY 1996 (126 deaths) to CY 1997 (129 deaths).

- D. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, 72% were in three (3) of the 10 Federal regions -- Regions III, IV and X. These three regions also accounted for 62% of all logging establishments, and 68% of all logging employees. See **Figures 2 and 3**, pages 3 and 4.
- E. Almost half of the 50 States (48%) reported no logging fatalities in FY 1996 or FY 1997, although all states, except North Dakota, experienced some level of logging activity over this two-year period. These 24 states represented 11% of all logging establishments, and 9% of all logging employees. See **Figures 5 and 6**, pages 5 and 6.
- F. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, 52% were in Federal states and represented 53% of the establishments and 53% of the employees, and 48% were in State Plan states and represented 46% of the establishments and 47% of the employees. Of these 26 states with fatalities, 10 were implementing Local Emphasis Programs on logging in one or both years. See **Figures 5 and 6**, pages 5 and 6.
- G. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, almost half (49%) were in one of the eight Forest Regions, the southern region. This region also accounted for 45% of the logging establishments and 49% of the logging employees. See **Figure 7**, page 7.
- H. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, more than half (59%) occurred over five months -- October, December, April, July and August. See **Figure 8**, page 8.
- I. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the time of day of the fatal incidents was indicated (33 case files), 73% of the victims died between the hours of 7:30 a.m. and 12:00 p.m. See **Figure 9**, page 9.

- J. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, the average age of those employees killed was 40. The youngest victim was 18 and the oldest 68. See **Figure 10**, page 10.
- K. Of the 107 OSHA logging fatality investigations in FY 1996 and FY 1997, 80 resulted in citations for 221 serious/willful/repeat violations and 78 other-than-serious violations. See **Figure 11**, page 11.
- L. Of the 80 OSHA logging fatality investigations in FY 1996 and FY 1997 that resulted in violations, 76 also resulted in a total penalty assessment of \$320,710. The average penalty for those assessed a penalty was \$4,220.
- M. Of the 107 logging establishments with fatalities investigated by OSHA in FY 1996 and FY 1997, 90% (96), employed fewer than 50 employees. See **Figure 12**, page 12.
- N. For FY 1996 and FY 1997, the rate of logging fatalities to logging establishments was one (1) fatality per 132 establishments. For FY 1996, there was one (1) death per 227 establishments, and for FY 1997, one (1) death per 320 establishments.

Note: Throughout this report, the acronym OSHA is used to collectively refer to Federal OSHA activities and State OSHA activities.



A logging operation. Photo credit: OSHA SLC Lab

III. OBSERVATIONS ❖ ❖

- A. Of the 50 states with logging activity in FY 1996 and FY 1997, almost half (24 states or 48% of all states) reported no OSHA-investigated logging fatalities. These 24 states represented 11% of all logging establishments, and 9% of all logging employees.¹ Of these 24 states, four (4) had significant numbers of logging establishments, between 111 and 418. Two (2) states (Maine and Wisconsin) had a significant number of logging establishments, 497 and 450 respectively, and only one (1) fatality each. See **Figures 5 and 6**, pages 5 and 6.

Observation. Could the number of fatal logging incidents in the United States be influenced by identifying and promoting, nationwide, practices, regulations and procedures that have worked in those states with significant logging activity but no fatalities or a low number of fatalities?

- B. Of the 26 states with OSHA-investigated logging fatalities in FY 1996 and FY 1997, almost half (11 states or 42%) accounted for more than three fourths of all fatalities (80 or 75%). The rate of logging fatalities among the states was also noteworthy. While Utah reported one (1) fatality investigation for every nine (9) establishments, Maine and Wisconsin reported one (1) for every 497 and 450 establishments, respectively. See **Figures 5 and 6**, pages 5 and 6.

¹ The number of logging fatalities investigated by OSHA was totaled for FY 1996 and FY 1997. Source: OSHA's Integrated Management Information System (IMIS). The number of logging establishments was averaged for CY 1996 and CY 1997. Source: County Business Pattern reports.

Observation. Could the number of logging fatalities in the United States be influenced by focusing efforts more strategically in those states that accounted for most of the deaths in FY 1996 and FY 1997? Special attention could also be given to those states with the highest rate of OSHA-investigated fatalities, e.g., Utah, Illinois, Virginia, Vermont, West Virginia and New York.

- C. Of the 107 logging employees killed at OSHA-investigated sites in FY 1996 and FY 1997, 5 percent were 18 and 19 years old, 22% were 20-29 years old, 23% each were 30-39 and 40-49 years old, 20% were 50-59 years old and 7 percent were 60 years old or older. See **Figure 10**, page 10.

Observation. Generally, older workers are thought to be more knowledgeable and experienced in their occupation and, therefore, suffer fewer on-the-job injuries. Such an inference, however, cannot be proven without establishing the age distribution in the industry. Nonetheless, when looking at age alone for those killed in fatal logging incidents investigated by OSHA in FY 1996 and FY 1997, the older workers suffered about the same number of fatal injuries as the younger workers.

Could the rate of logging deaths in all age groups be influenced by reevaluating the impact that experience and training has had on injuries, illnesses and fatalities in the industry, and, as appropriate, providing additional training and information to employers and employees in accident and injury prevention?

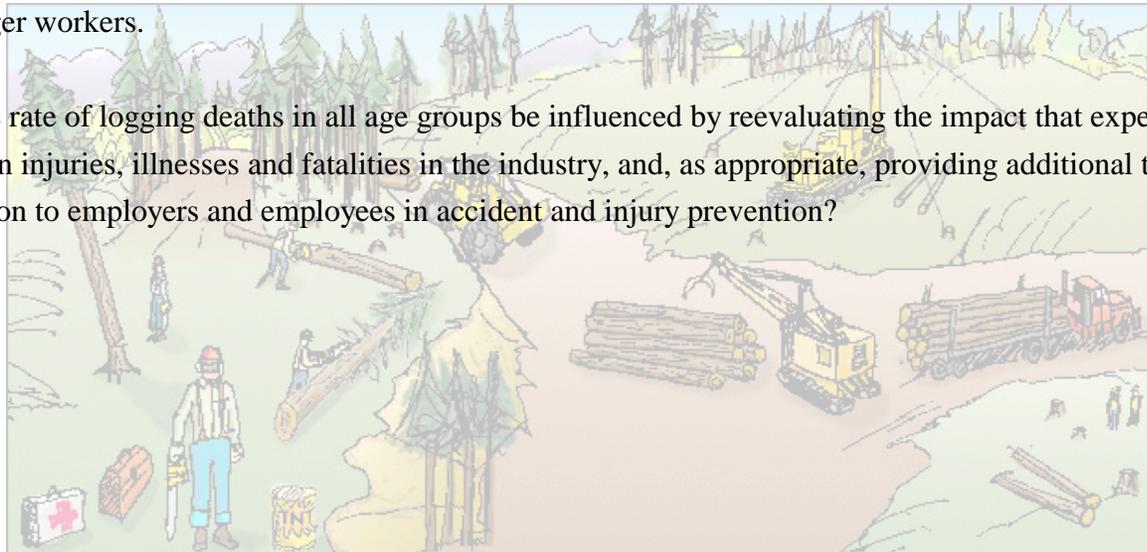


Figure 1

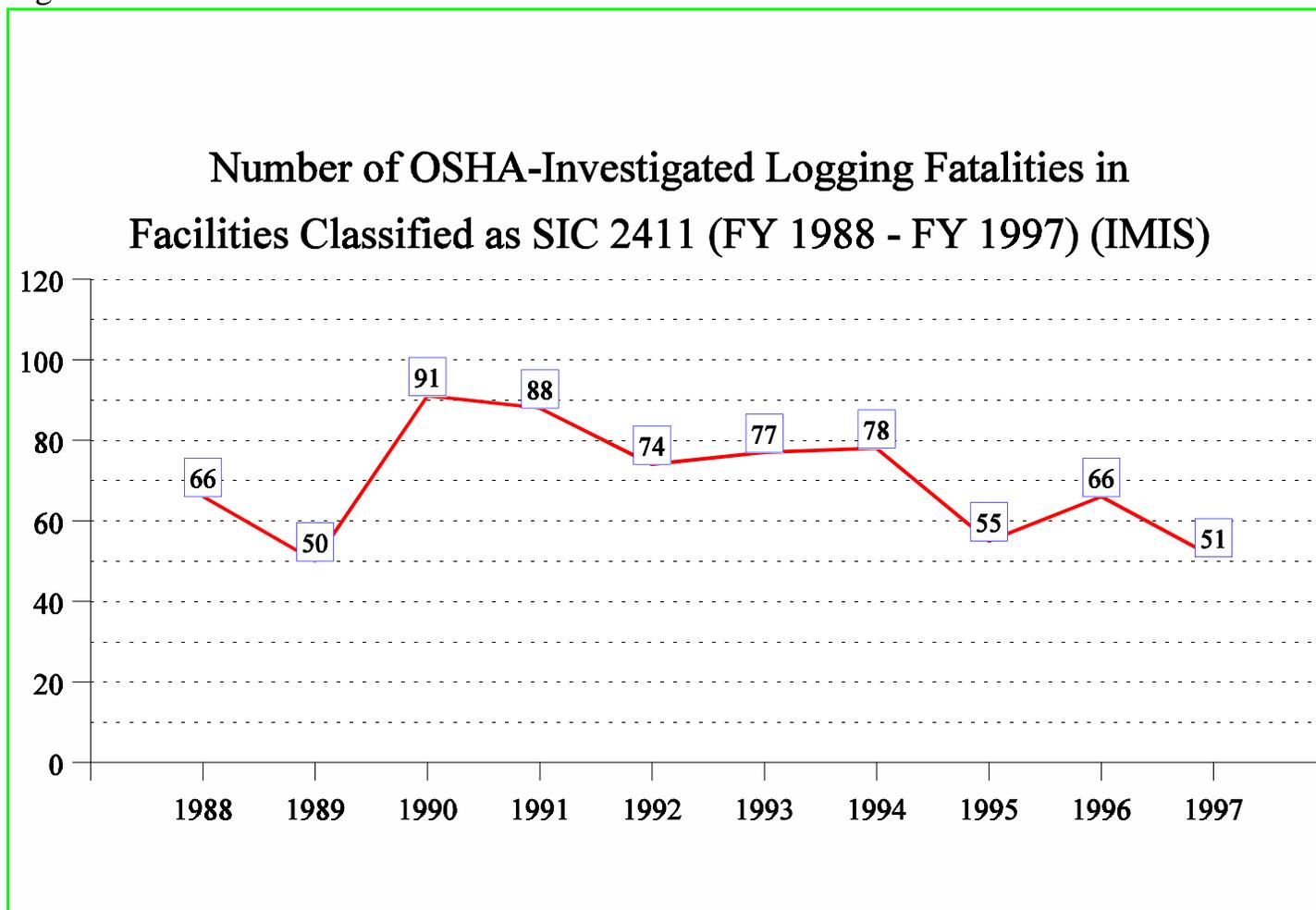


Figure 2

Fatal Occupational Logging Injuries in SIC 2411 (1992 - 1997)

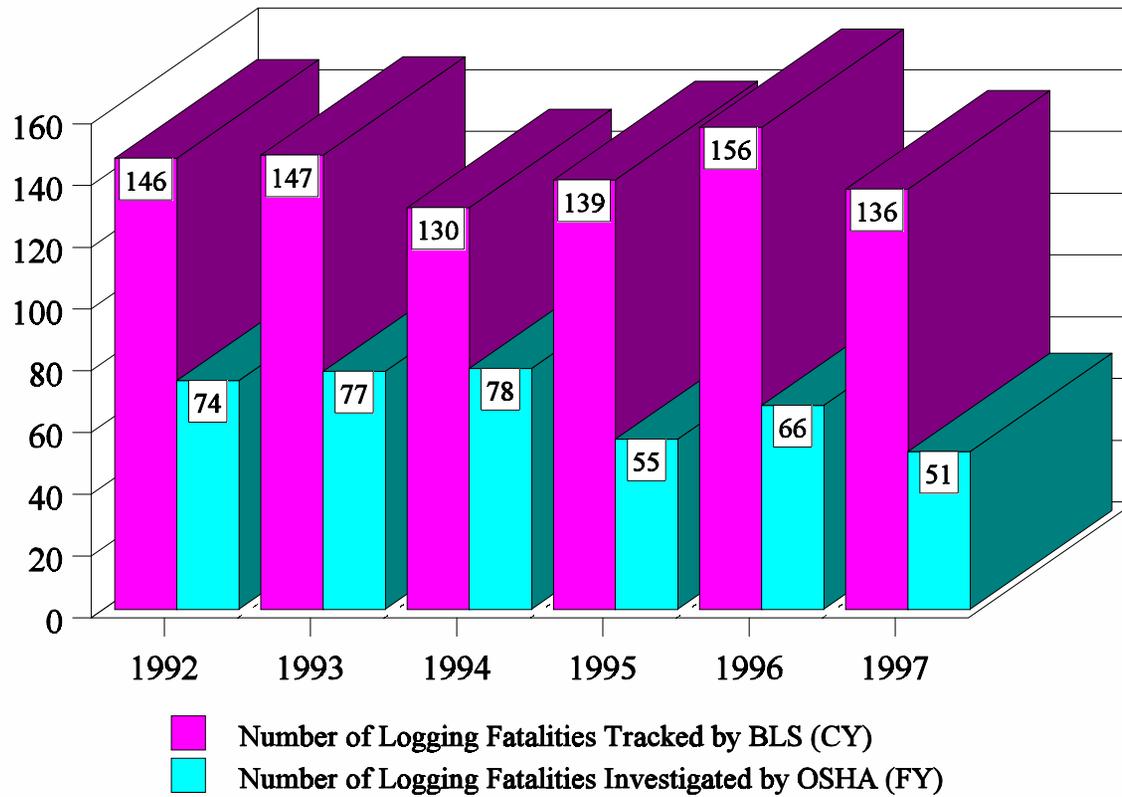


Figure 3

Number of OSHA-Invetigated Logging Fatalities by Federal Region (FY 1996 - FY 1997) (IMIS)

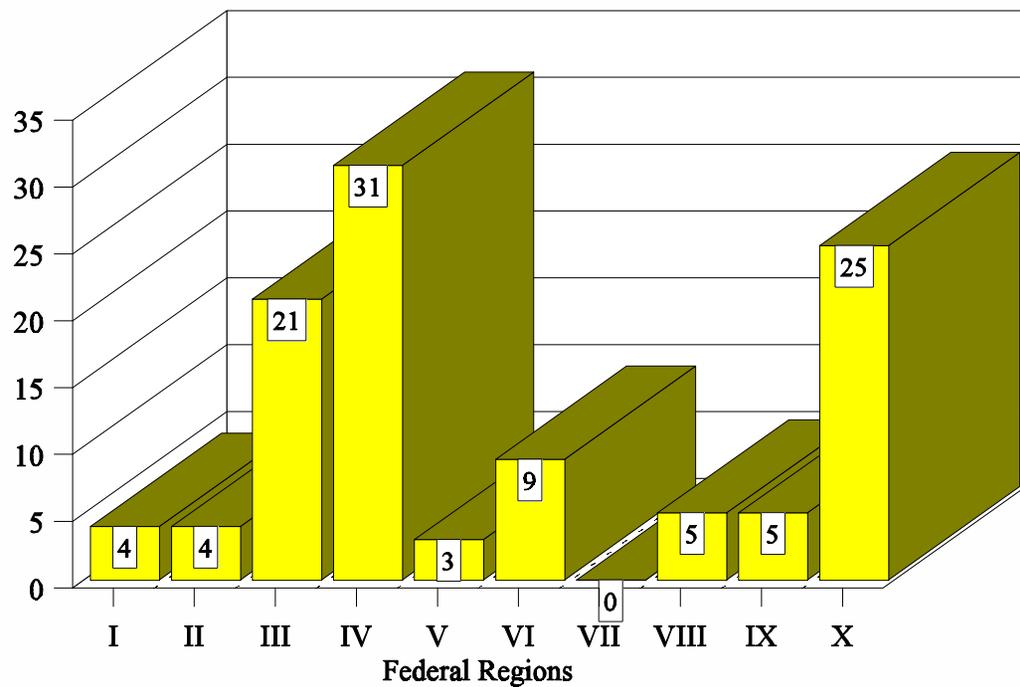


Figure 4

United States Federal Regions

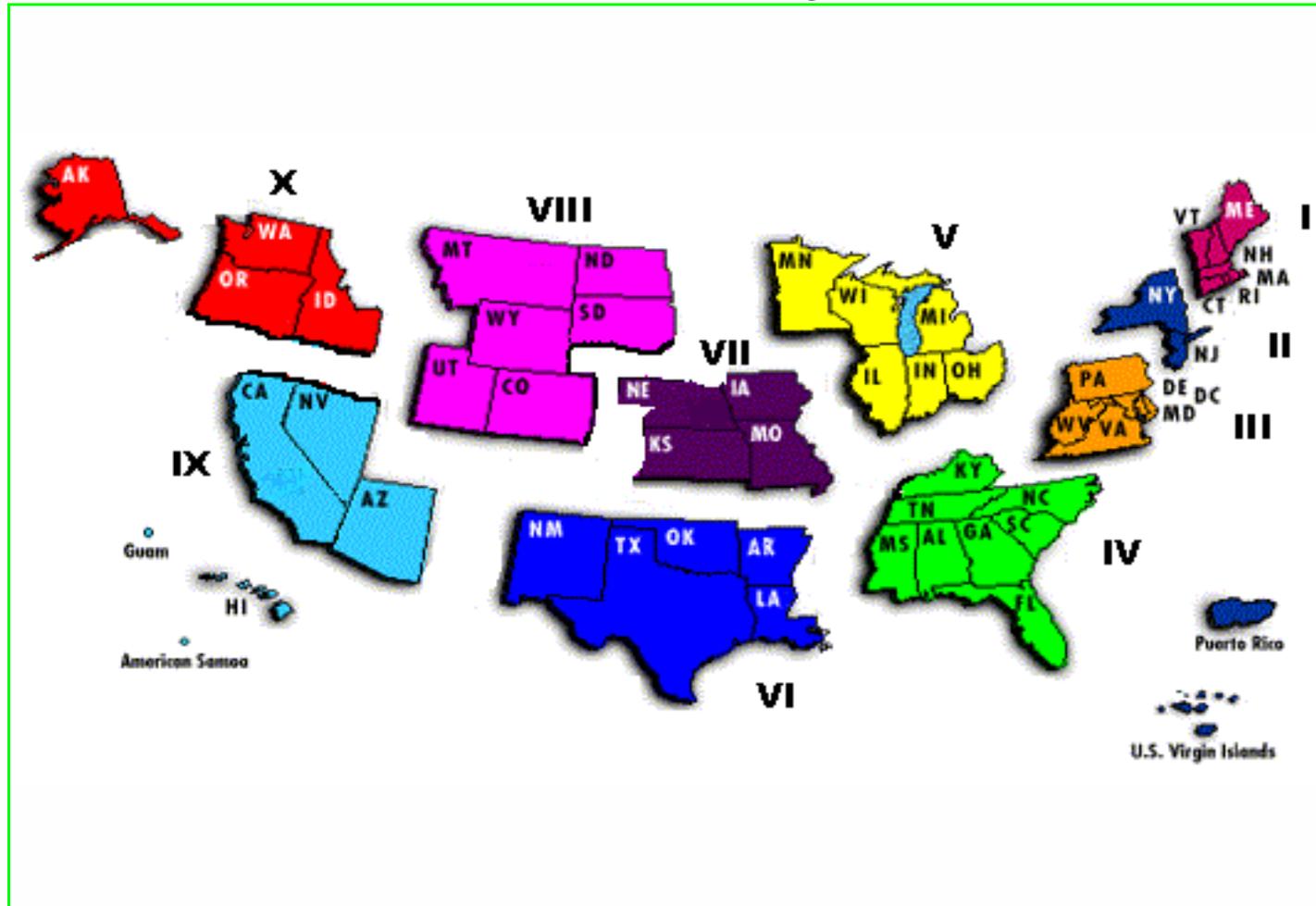


Figure 5

Number of Logging Establishments in Federal States
 (Number of Establishments Averaged for CY 1996 and CY 1997, County Business Pattern)
 (Number of Establishments With OSHA-Investigated Fatalities, Totaled for FY 1996 and FY 1997, IMIS)

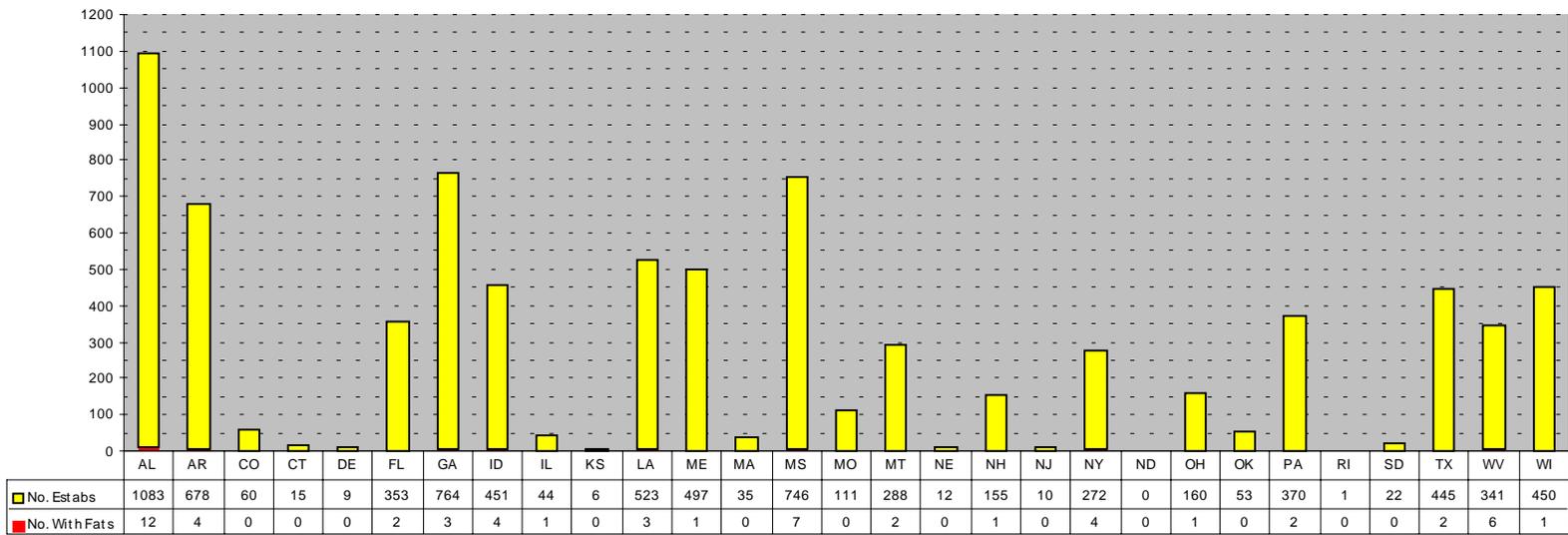


Figure 6

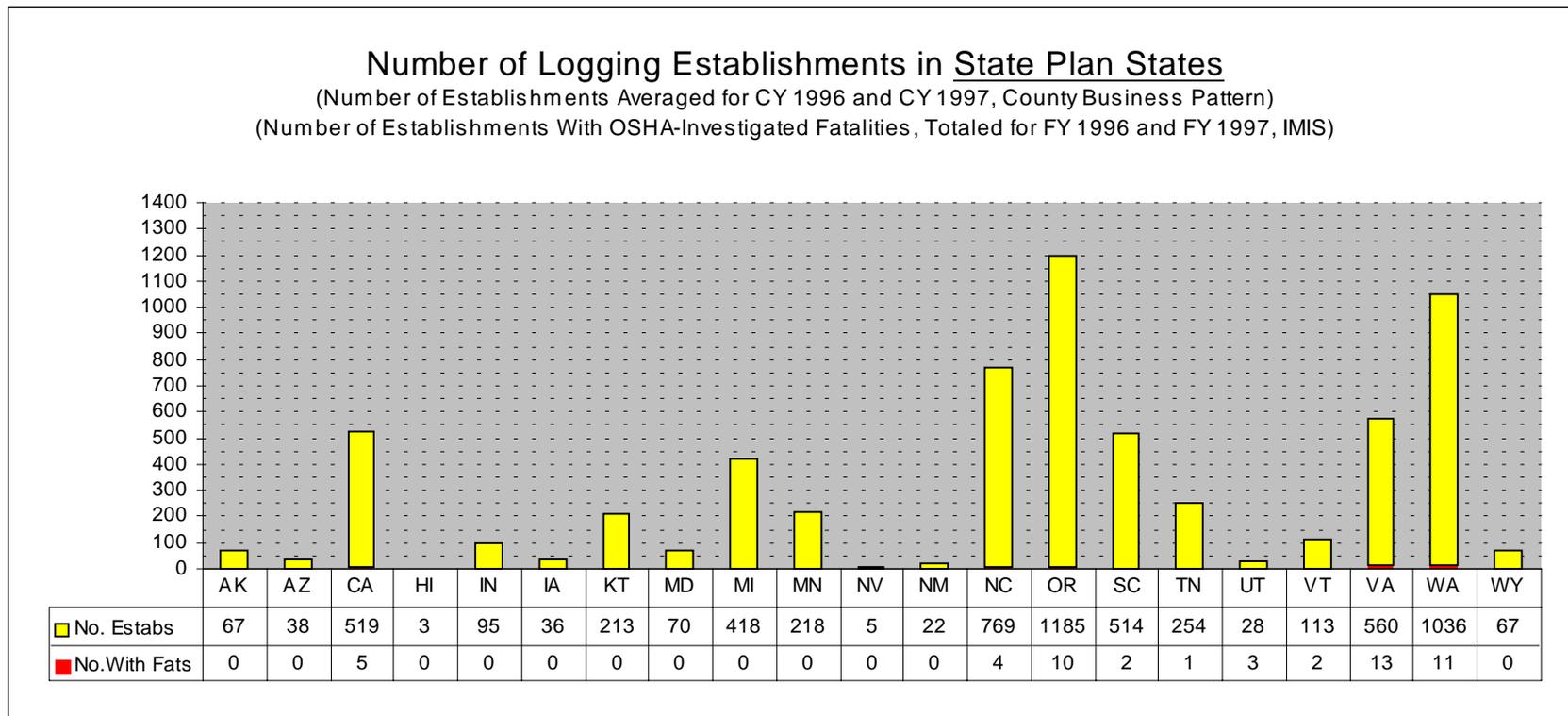


Figure 7

Number of OSHA-Investigated Logging Fatalities by Forest Region (FY 1996 - FY 1997) (IMIS/USDA)

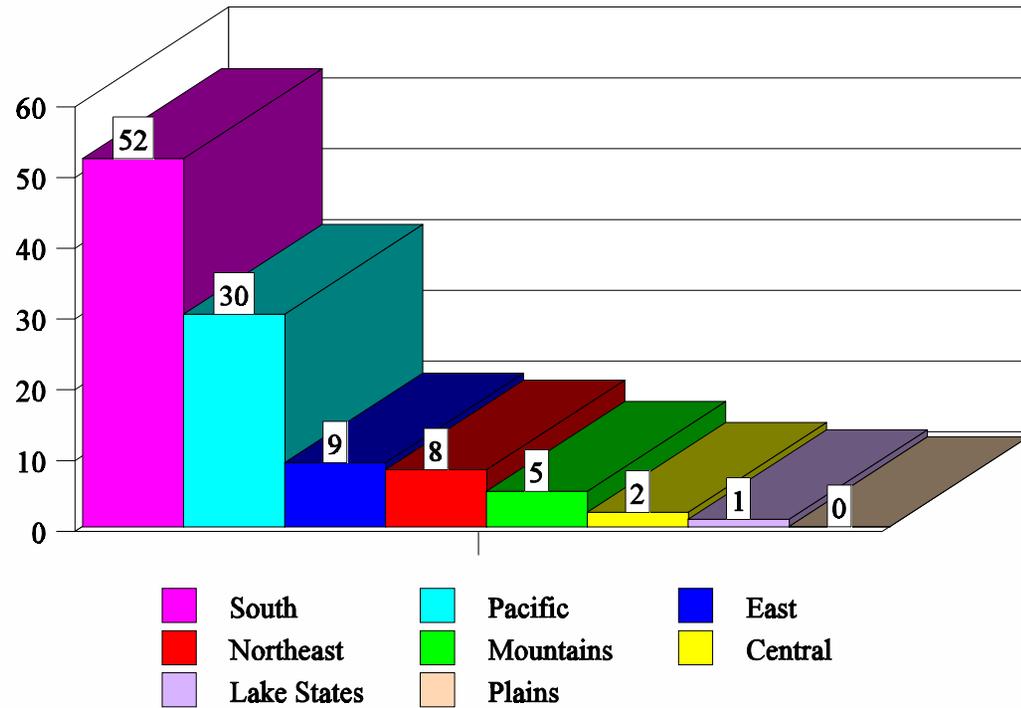


Figure 8

Number of OSHA-Investigated Logging Fatalities by Month of Year (FY 1996 - FY 1997) (IMIS)

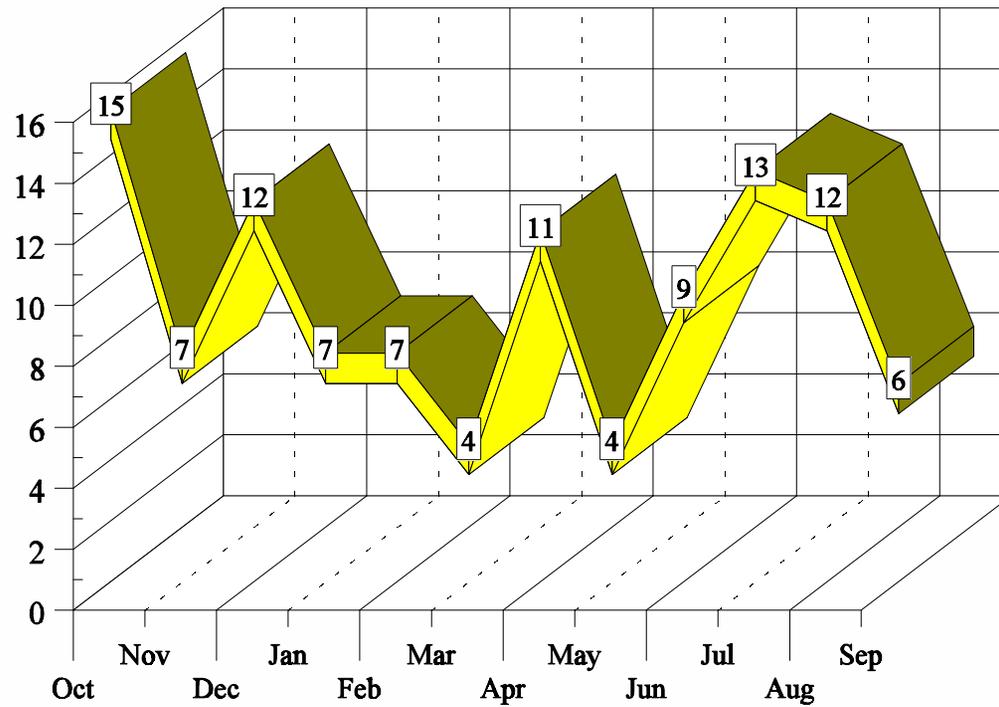


Figure 9

Percent/Number of OSHA-Investigated Logging Fatalities by Time of Day (FY 1996 - FY 1997) (IMIS)

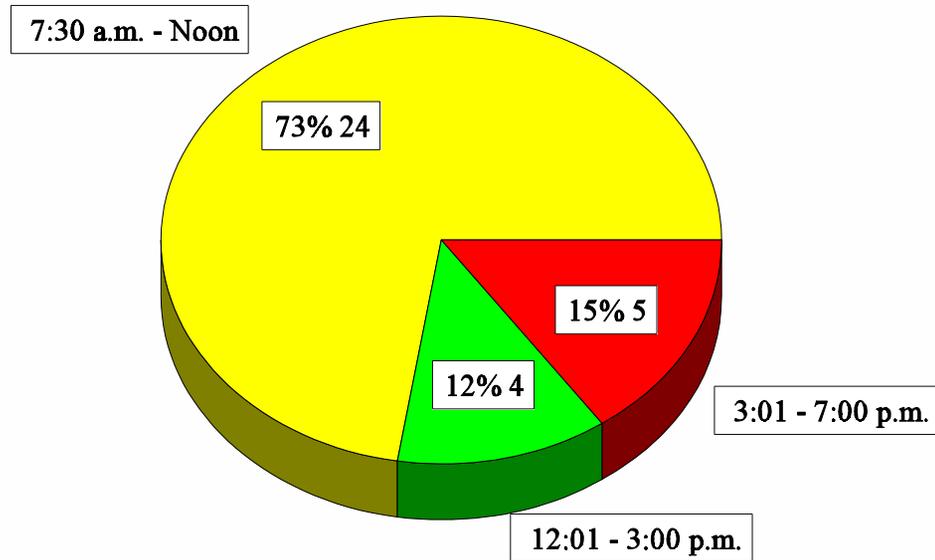


Figure 10

Number of OSHA-Investigated Logging Fatalities by Age Group (FY 1996 - FY 1997) (IMIS)

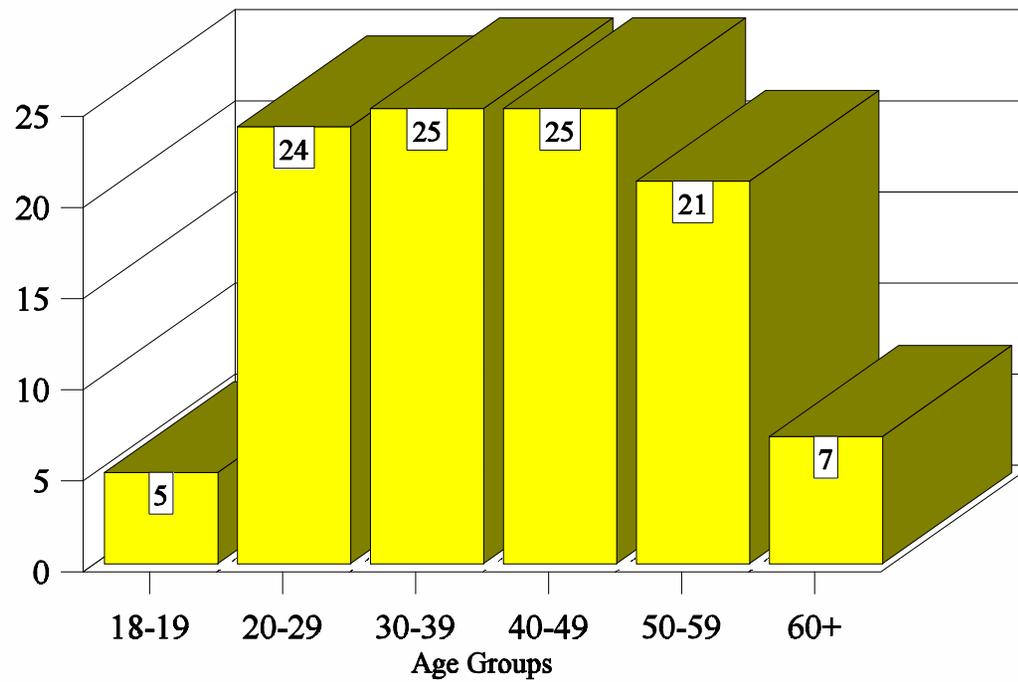


Figure 11

**Percent/Number Violations From OSHA-Investigated
Logging Fatalities (FY 1996 - FY 1997) (IMIS)**

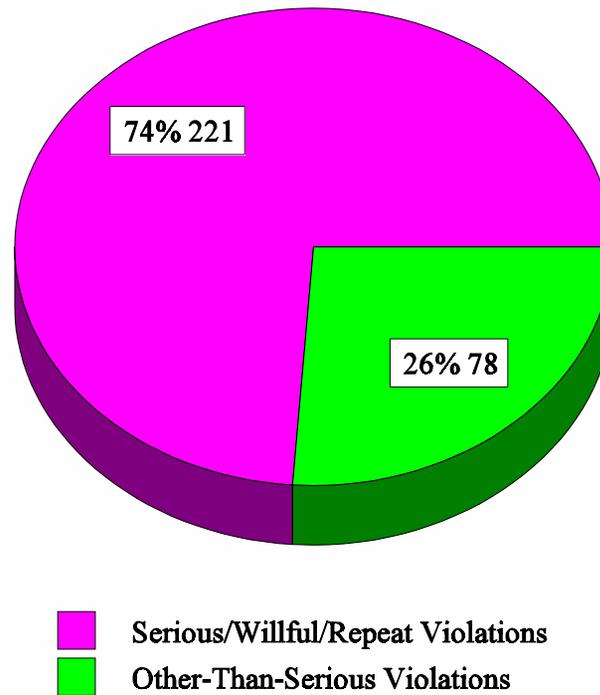
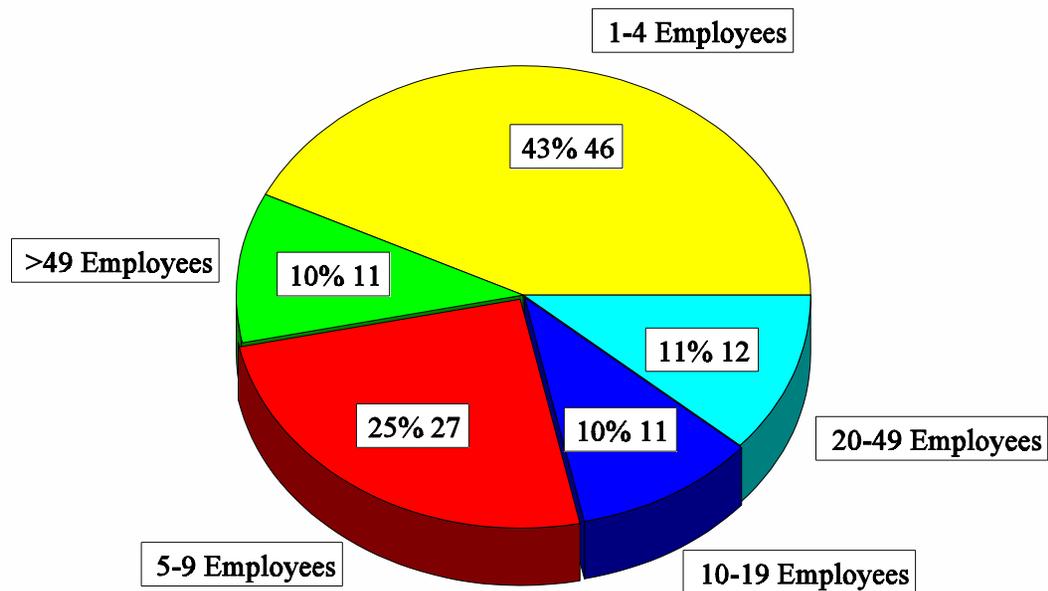


Figure 12

Percent/Number Logging Establishments and OSHA-
Investigated Fatalities by Employment Size (FY96-FY97) (IMIS)



A Review of Logging Fatalities Investigated
by the Occupational Safety and Health
Administration in FY 1996 and FY 1997

Part 2

Executive Summary

II. HIGHLIGHTS ❖❖

This summary highlights the results of the review of 107 case files of logging fatalities investigated by OSHA in FY 1996 and FY 1997 -- 51 investigations by states operating comprehensive OSHA-approved safety and health programs, and 56 investigations by Federal OSHA. The complete review is provided in section VI of the full Logging Report, pages 12-65, and the Appendix. The statements that follow reflect the results of the review of ten (10) groups of data or information from these files: (1) the occupation of the victims fatally injured, (2) the location of the victims fatally injured, (3) the type of accidents that resulted in the victims death, (4) the employees' activity at time of the fatal injury, (5) the type of incident that resulted in the victims' death, (6) the factors that may have contributed to the victims death, (7) the source of the victims' fatal injury, (8) the action that resulted in the victims death, (9) the victims' work pattern at the time of the fatal injury, and (10) the specific standards' violations cited by OSHA during its investigation of the fatal incidents.

- A. From FY 1983 - FY 1997, OSHA conducted 18,038 enforcement inspections in logging facilities classified as SIC 2411, 86% were planned inspections and 5 percent were in response to fatal incidents. In FY 1996 and FY 1997, OSHA conducted 1,375 enforcement inspections in logging facilities, 75% were planned inspections and 9 percent were in response to fatal incidents. The level of inspection activity in FY 1996 and FY 1997 represented a decline (52% and 67%, respectively), over FY 1990. See **Figure 1**, page 1.

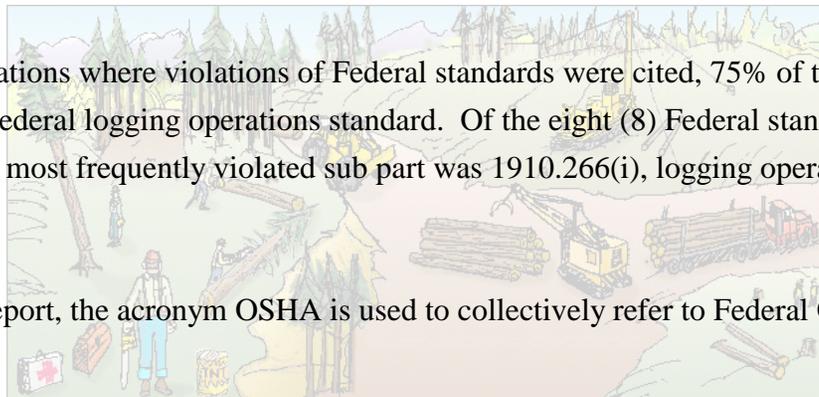
- B. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the occupation of the victims could be determined, 35% of the victims were fellers or fallers of trees, 34% were machine/equipment operators and 21% were limbers/buckers. Of the 36 machine/equipment operators, 36% were operators of skidder machines, and 22% were operators of log trucks. See **Figures 2-5**, pages 2-5.

- C. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the location of the victims at the time of death could be determined, 37% of the victims were working in areas where trees were being cut and felled, and 20% were in areas where felled trees were being limbed or bucked. See **Figures 6 and 7**, pages 6-7.
- D. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the type of accident that caused the victims' fatal injuries could be determined, 77% of the victims were fatally injured when 'struck by' objects. Of the 82 victims struck by objects, 78% were struck by trees or tree parts and 12% were struck by logs. Of the 64 victims struck by trees or tree parts, 64% were struck by falling trees and 15% were struck by lodged trees that dislodged. Of the 41 falling trees that caused fatal injuries, 39% were danger trees. See **Figures 8-13**, pages 8-13.
- E. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the victims' activity at the time of death could be determined, 32% of the victims were felling trees when fatally injured, and 23% were operating machines or equipment. See **Figures 14 and 15**, pages 14-15.
- F. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the type of fatal incident could be determined, 92% of the fatal incidents resulted from a failure of the victim, other employees or the employer to follow designated safety procedures. See **Figures 16 and 17**, pages 16-17.
- G. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where a specific factor could be determined as directly relating to the cause of the fatal incident, the human factor was determined to relate to 92% of the 107 fatalities. See **Figures 18 and 19**, pages 18-19.

- H. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the victims' source of injury could be determined, 58% of the victims were fatally injured by a tree and 25% were fatally injured by a machine or equipment. See **Figures 20-21**, pages 20-21.
- I. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the source of the action that fatally injured the victims could be determined, 73% of the victims were fatally injured by their own actions. See **Figures 22 and 23**, pages 22-23.
- J. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, where the work pattern of the victims could be determined, 66% of the victims were working alone at the time of death. See **Figures 24 and 25**, pages 24-25.
- K. Of the 107 logging fatalities investigated by OSHA in FY 1996 and FY 1997, 75% of the investigations resulted in citations for violations of Federal or state standards. Of the 80 investigations that resulted in citations, 75% included violations related to the fatal incident. See **Figures 26-29**, pages 26-29.

- L. Of the 47 investigations where violations of Federal standards were cited, 75% of the safety infractions were for violations of the Federal logging operations standard. Of the eight (8) Federal standards cited during the 47 Federal investigations, the most frequently violated sub part was 1910.266(i), logging operations training. See **Figures 30-33**, pages 30-33.

Note: Throughout this report, the acronym OSHA is used to collectively refer to Federal OSHA activities and State OSHA activities.



A logging operation.

Photo credit: OSHA SLC Lab

III. OBSERVATIONS ❖❖

- A. In CY 1996 and CY 1997, logging (SIC 2411) was the second most dangerous and the most dangerous occupation in the United States based on rates published by the Bureau of Labor Statistics in the Census of Fatal Occupational Injuries (CFOI). Over a similar period of time, FY 1996 and FY 1997, OSHA conducted 1,038 programmed inspections in logging facilities, a decrease of 52% in FY 1996 and 67% in FY 1997 over FY 1990. See **Figure 1**, page 1.

Observation. OSHA's enforcement inspection intervention in the logging industry has not kept pace with the escalating safety and health problems. Could an increase in OSHA enforcement interventions reduce the incidence of fatal logging injuries?

- B. Of the 107 OSHA-investigated logging fatalities in FY 1996 and FY 1997, 92% resulted when the victim, other employees or the employer failed to followed designated safety procedures. See **Figure 16**, page 16.

Observation. Most logging fatalities investigated by OSHA in FY 1996 and FY 1997, could have been prevented. Could an increased presence of OSHA in the industry change employers' commitment to safe practices?

- C. The most frequently cited Federal standard in FY 1996 and FY 1997 was logging operations training. This involved 23 of the 47 Federal investigations where a violation of the training standard was cited. See **Figure 32**, page 32.

Observation. Half of the logging fatalities investigated by Federal OSHA identified some aspect of training as a major causal factor in the accident. Could an increase of training in the logging industry by OSHA reduce the incidence of fatal injuries?

Figure 1

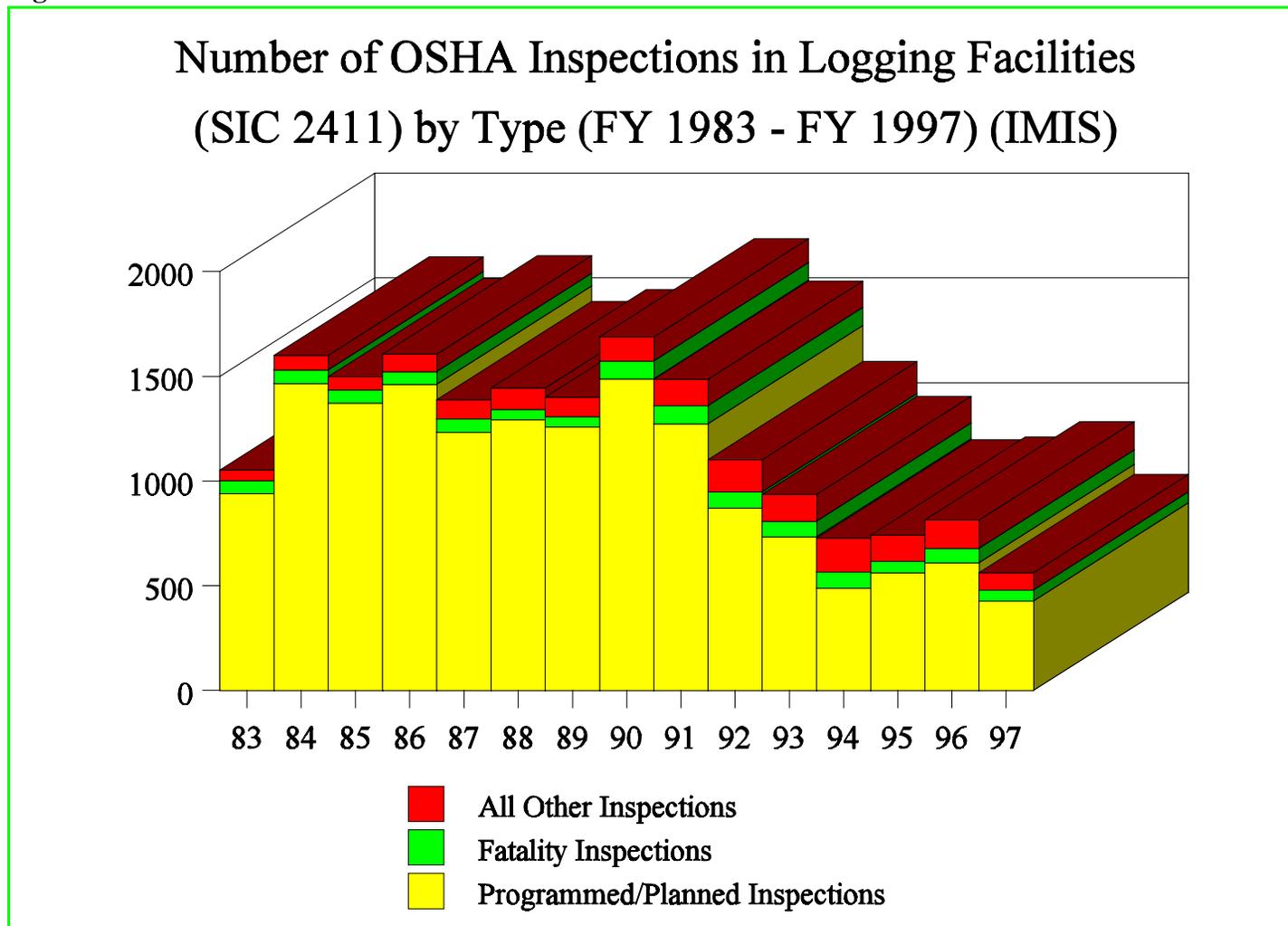


Figure 2

Number and Percent of OSHA-Investigated Logging Fatalities by Occupation (FY 1996 - FY 1997) (IMIS)

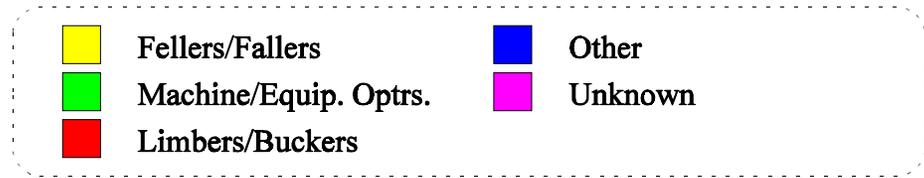
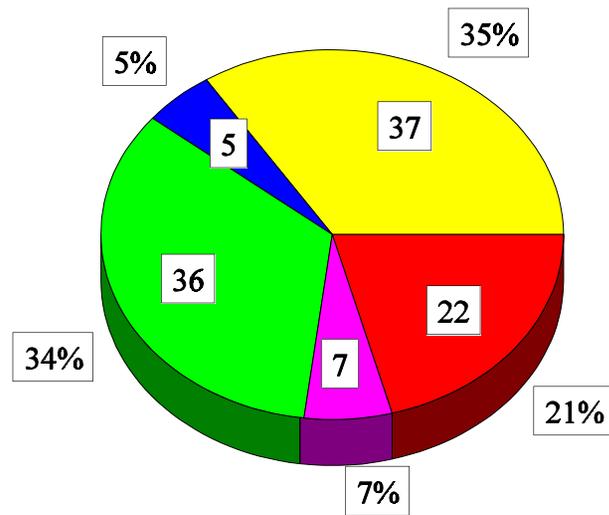


Figure 3

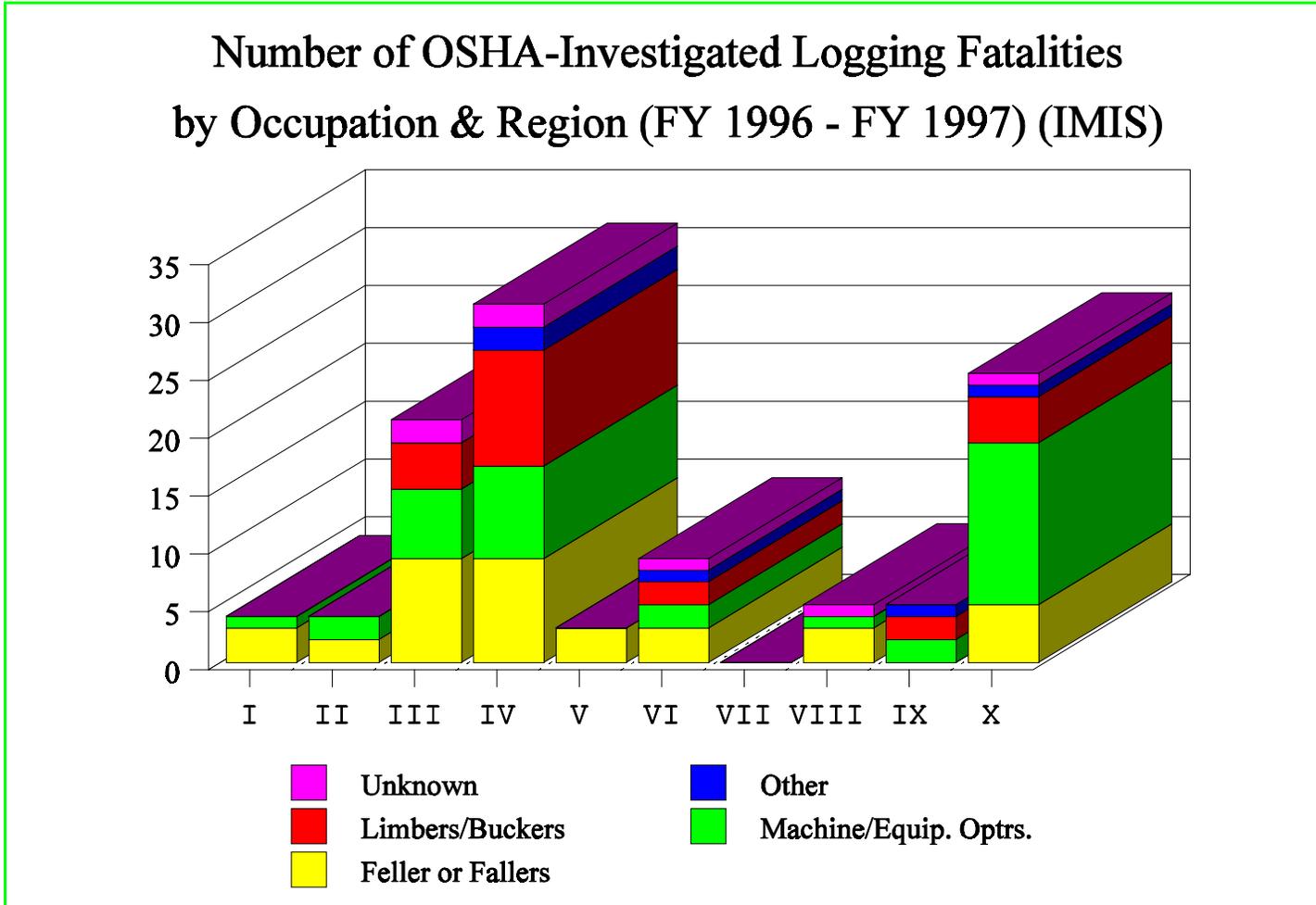


Figure 4

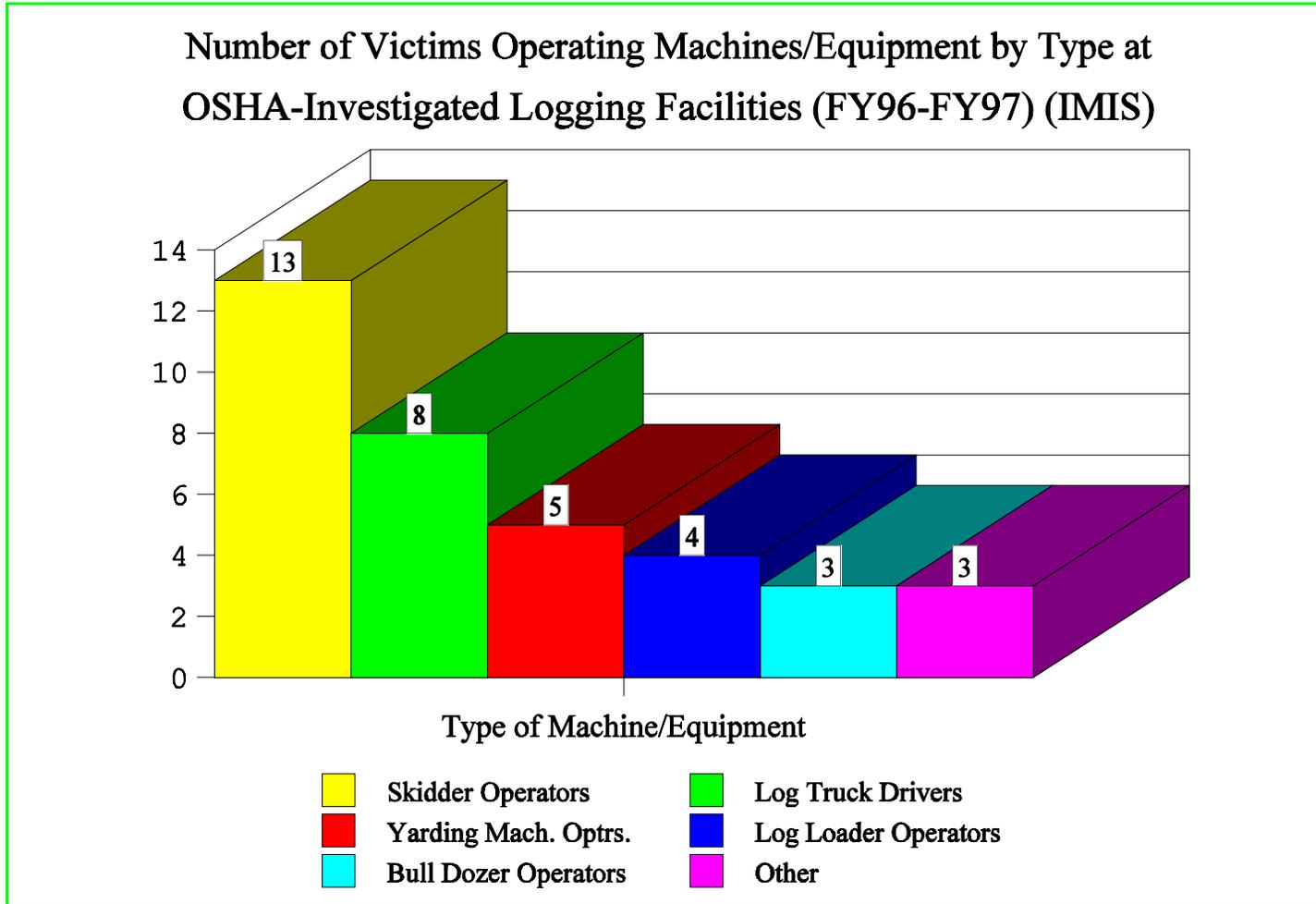


Figure 5

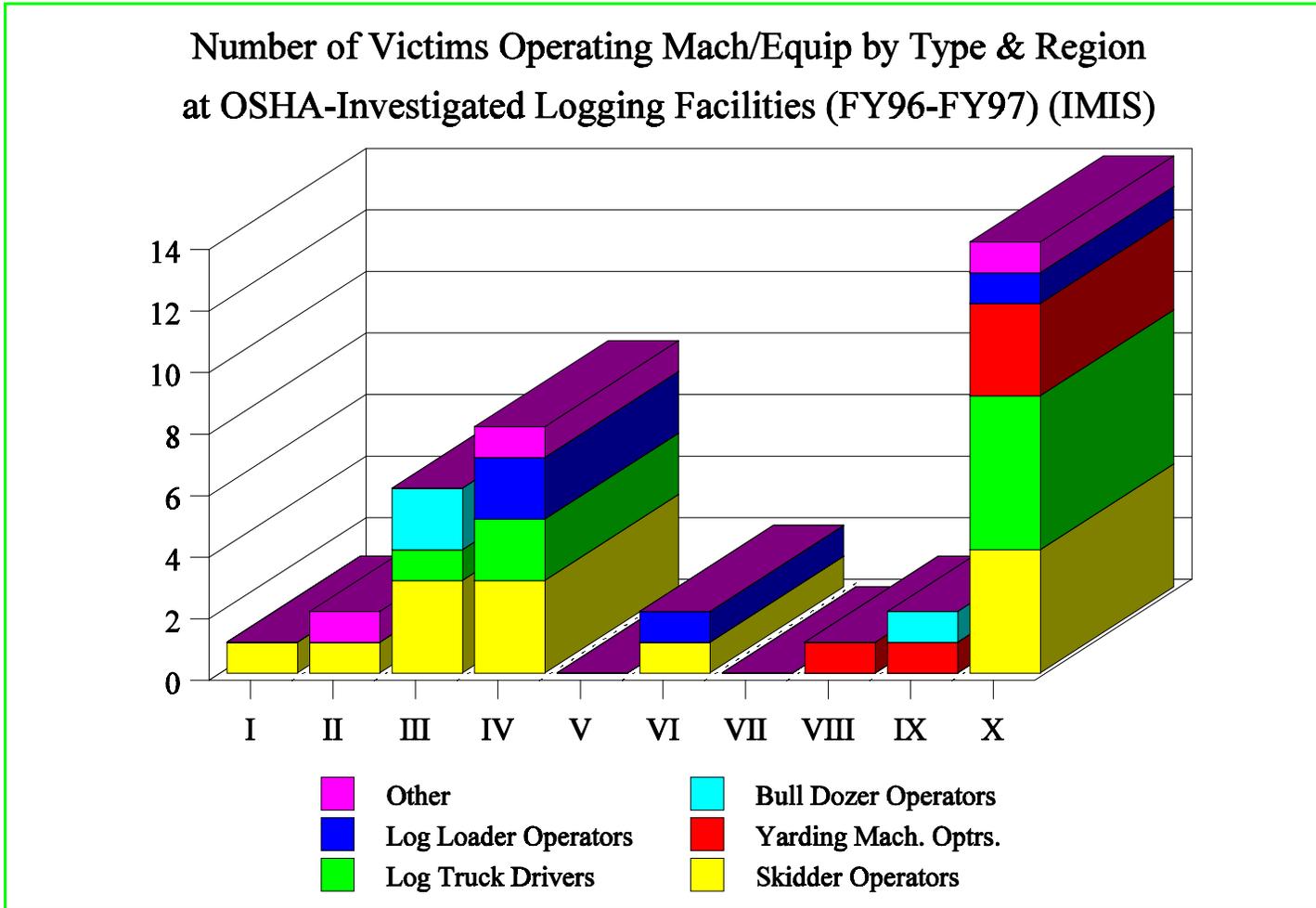


Figure 6

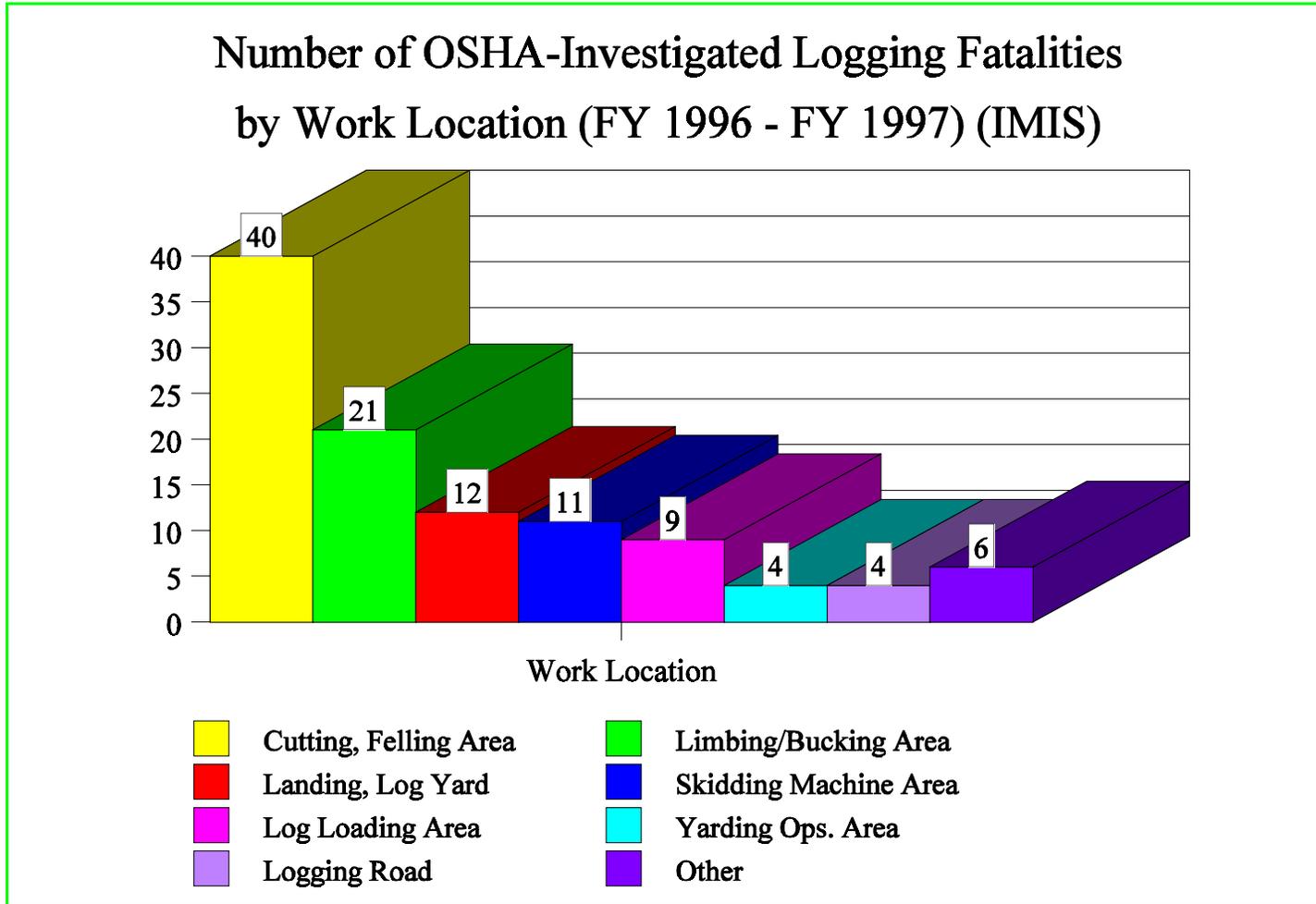


Figure 7

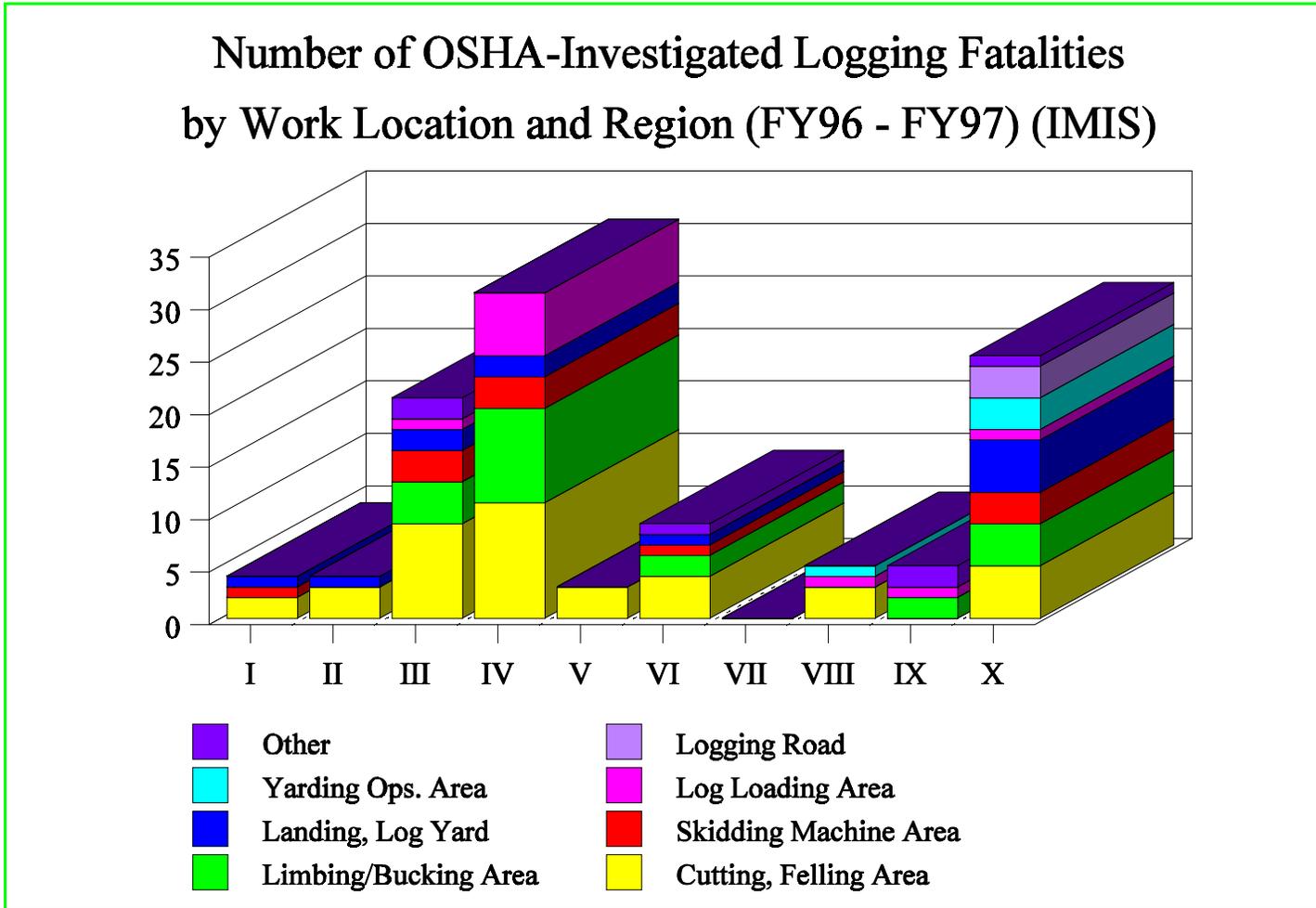


Figure 8

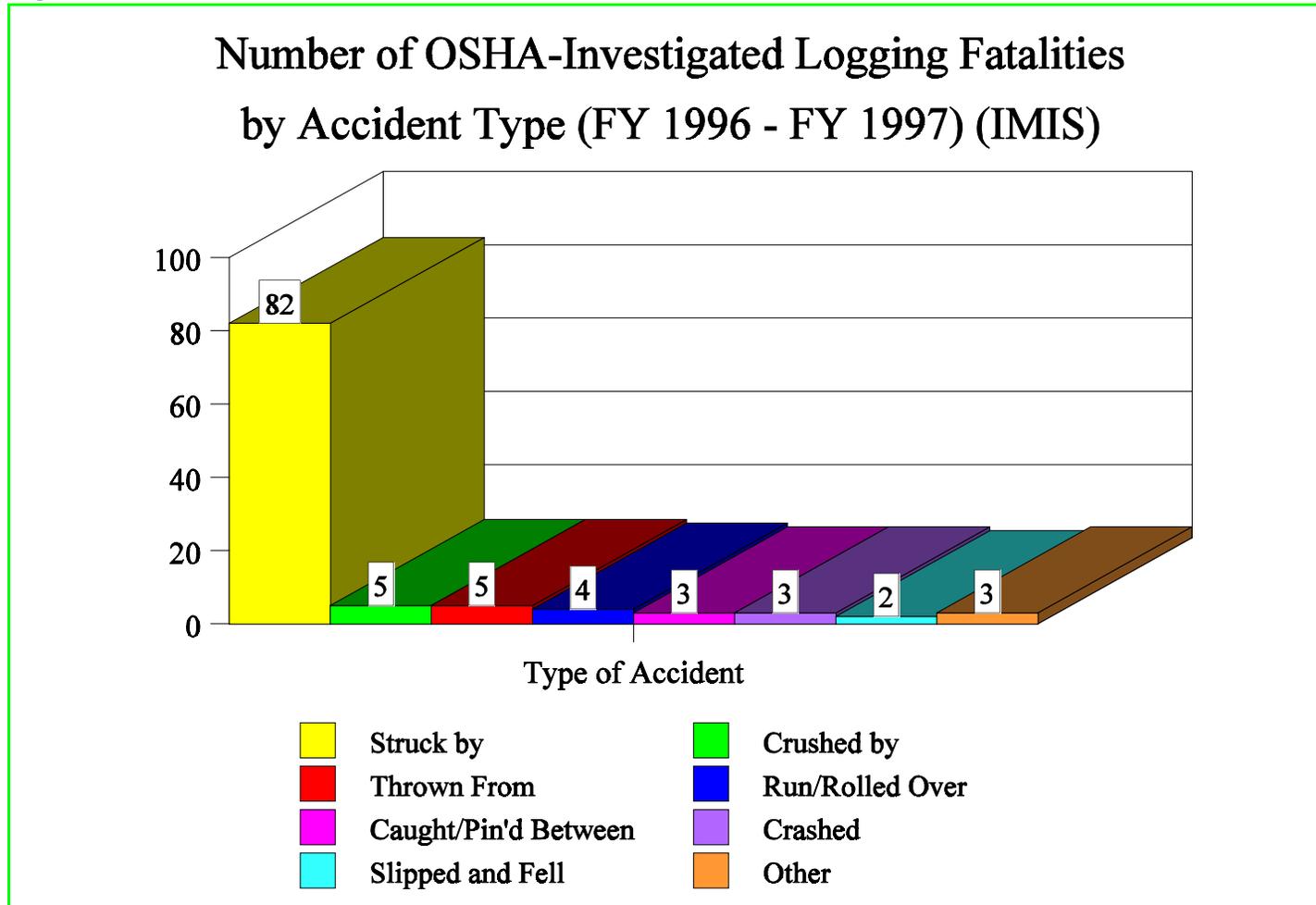


Figure 9

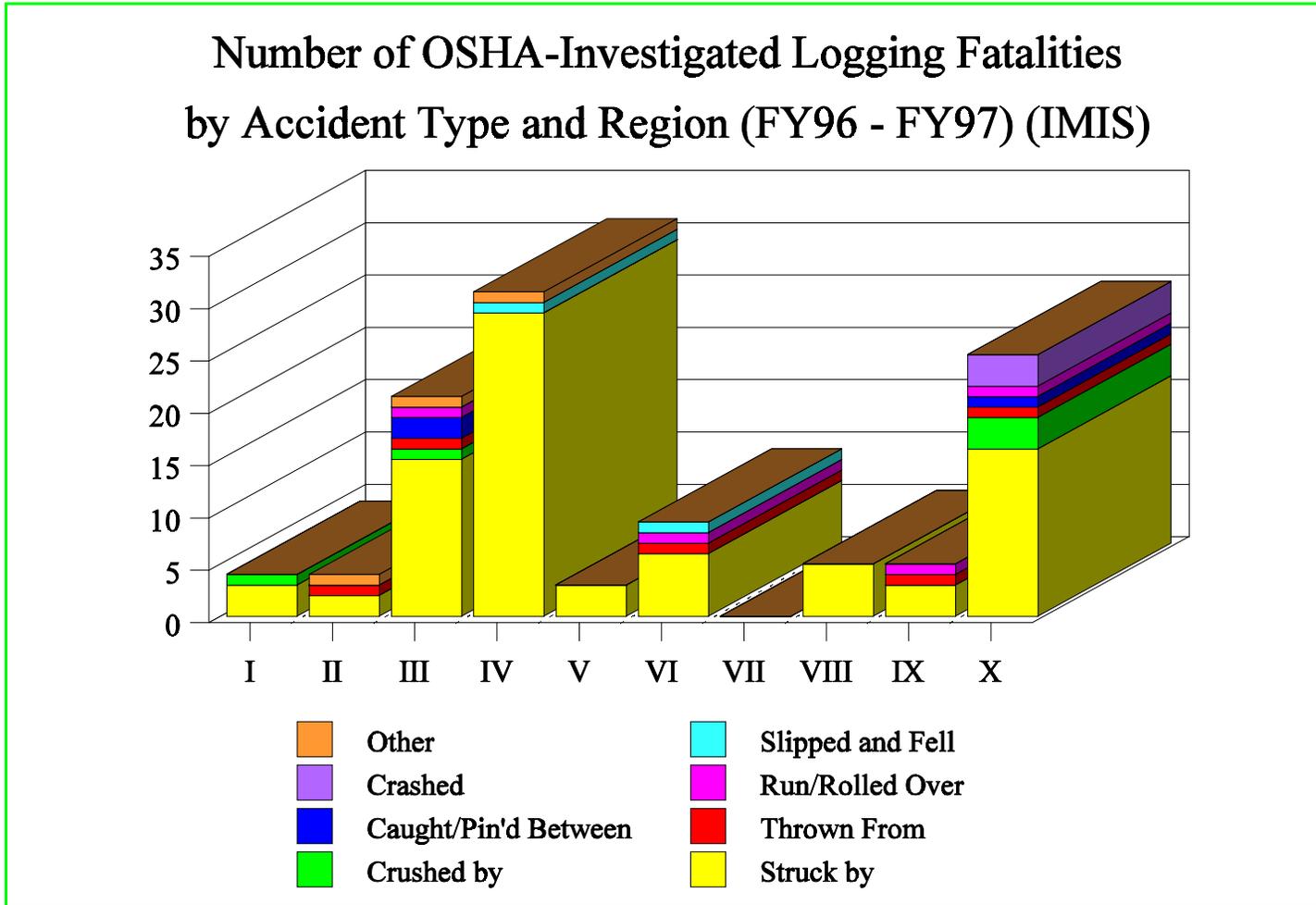


Figure 10

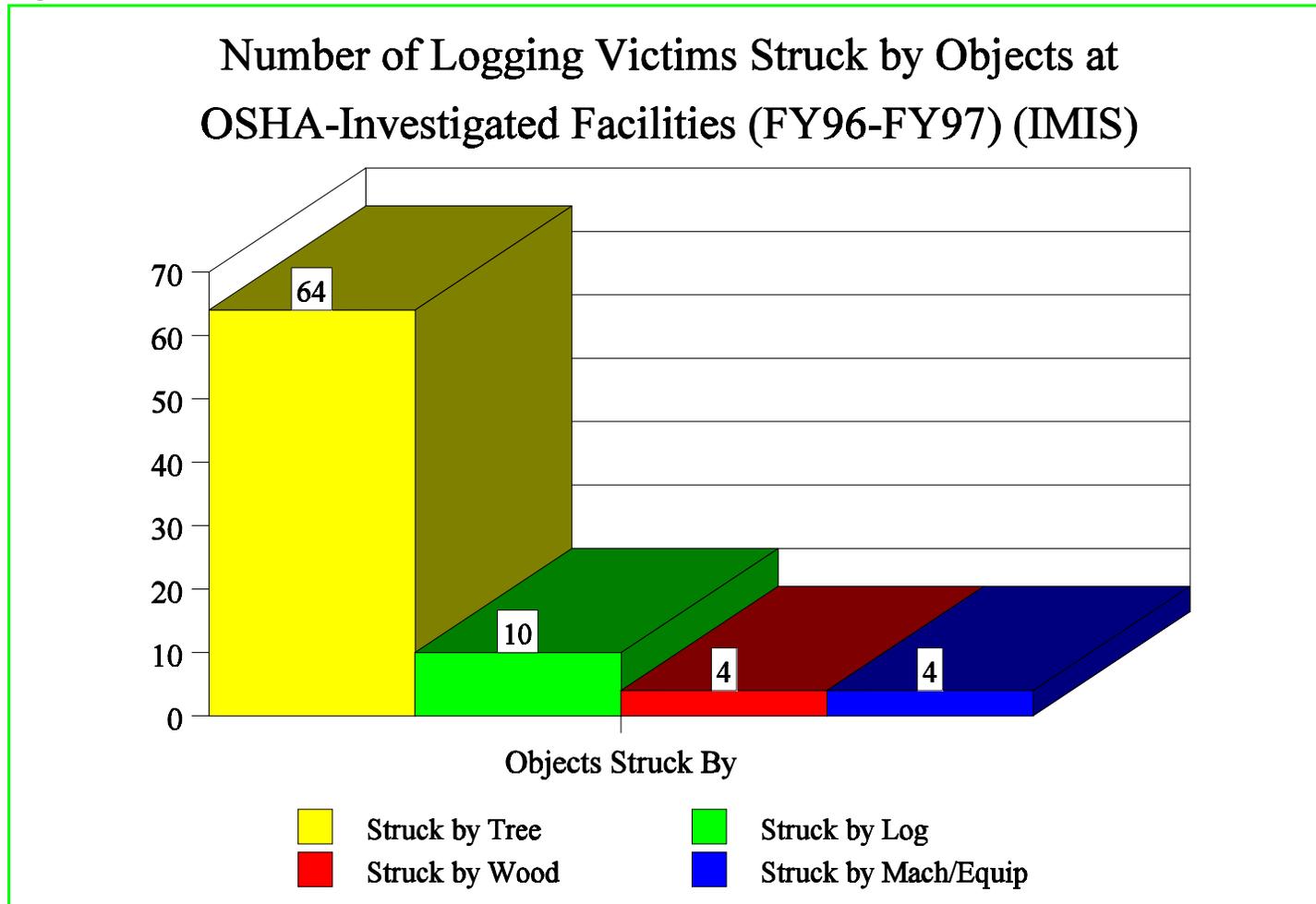


Figure 11

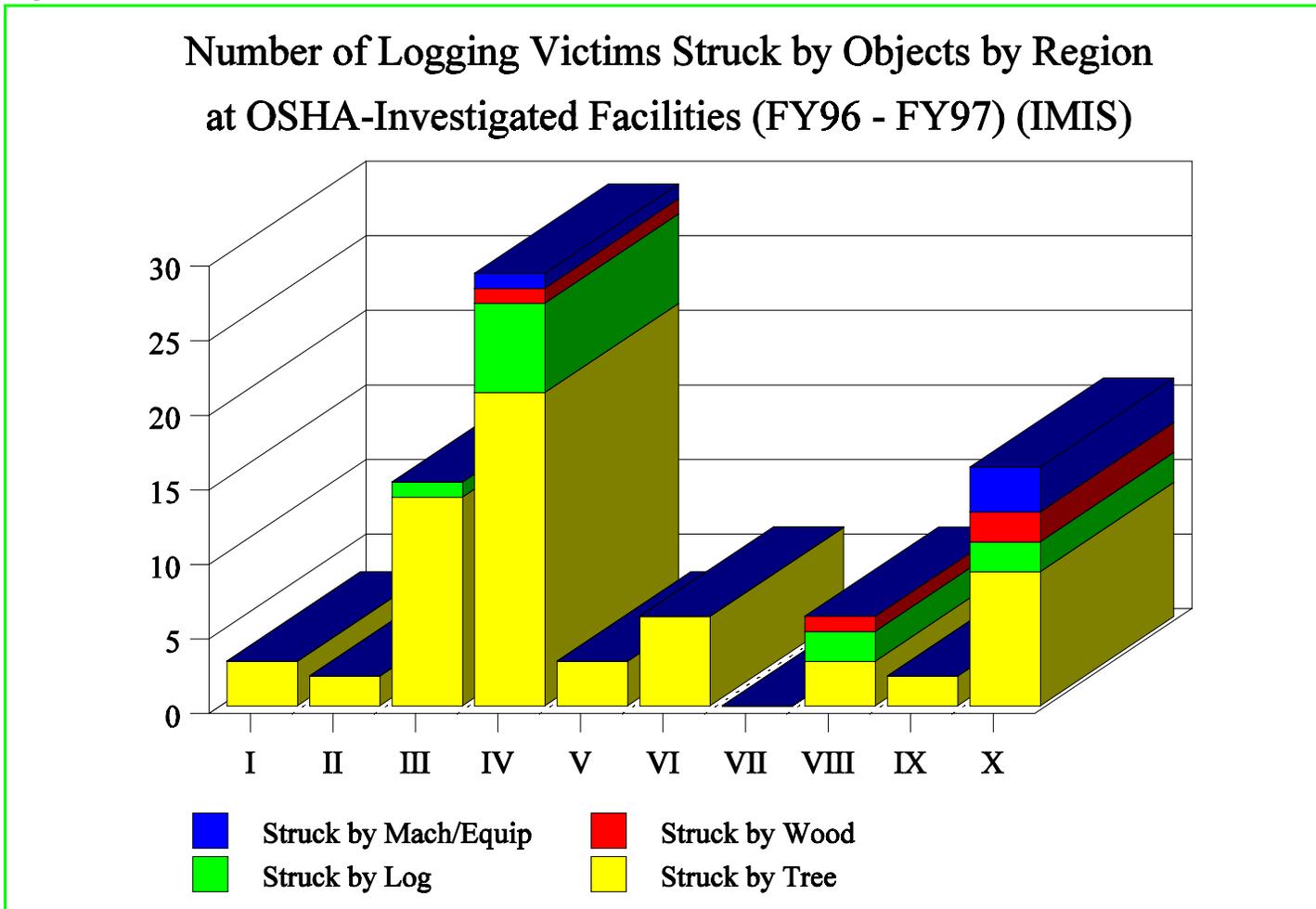


Figure 12

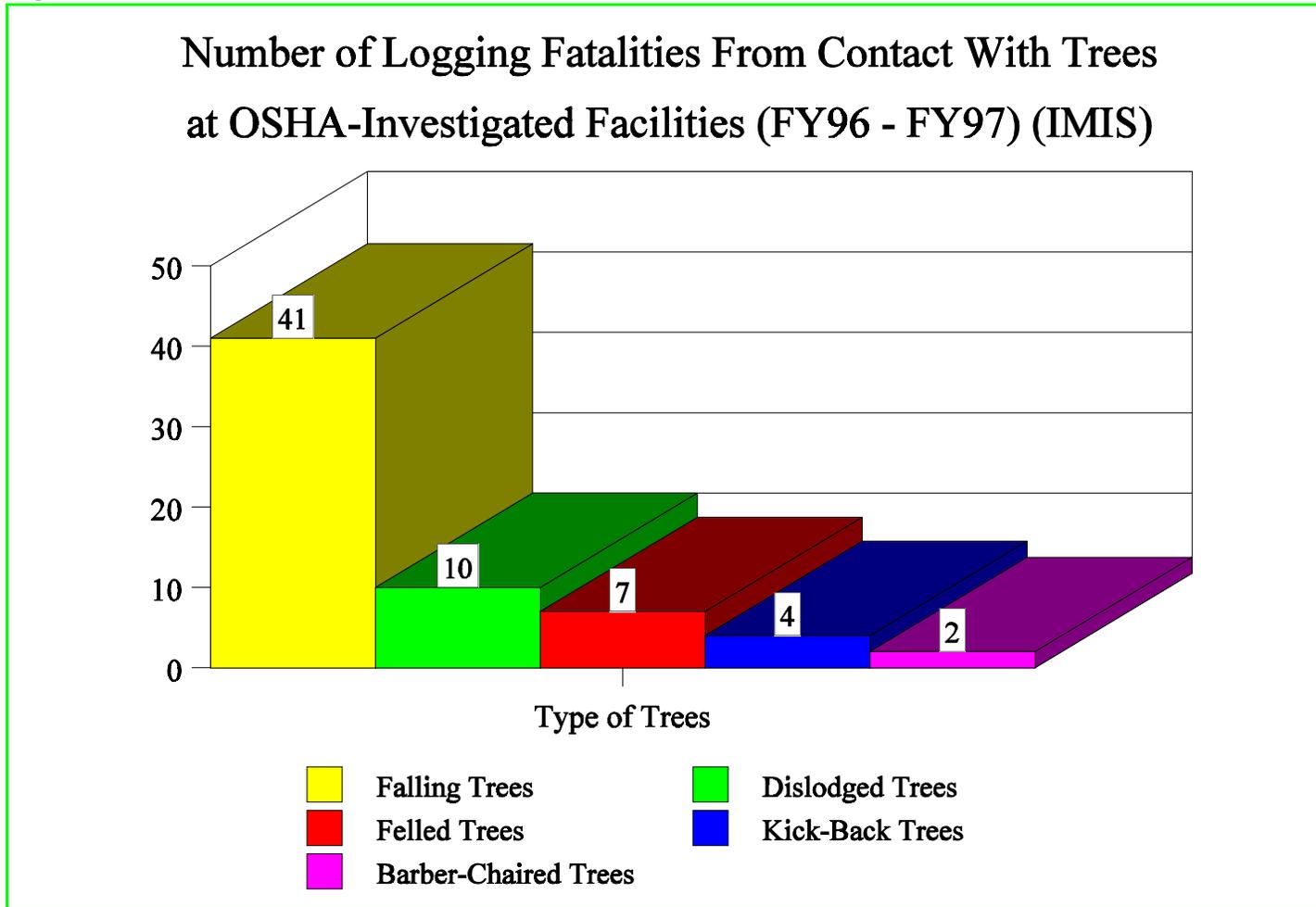


Figure 13

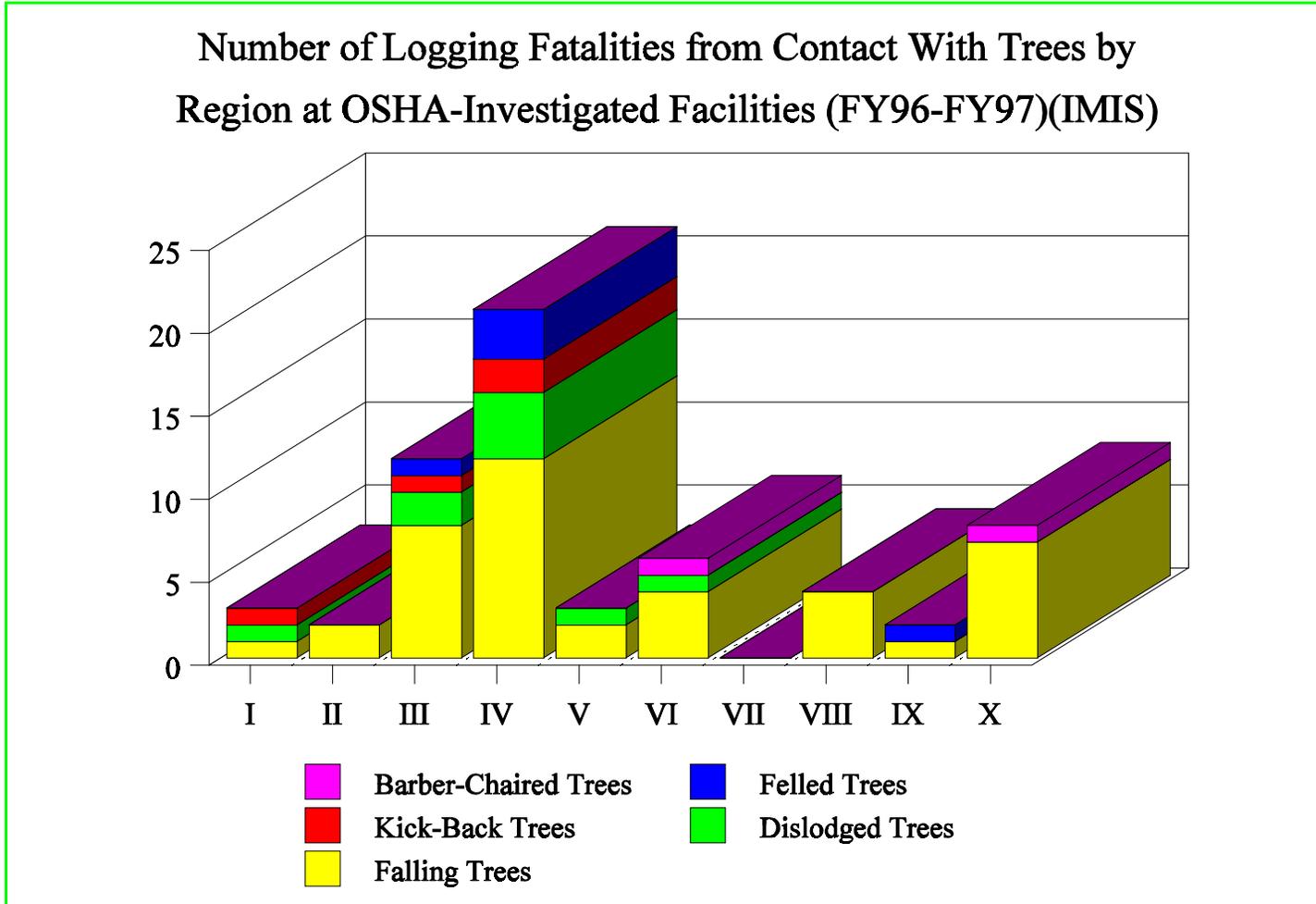


Figure 14

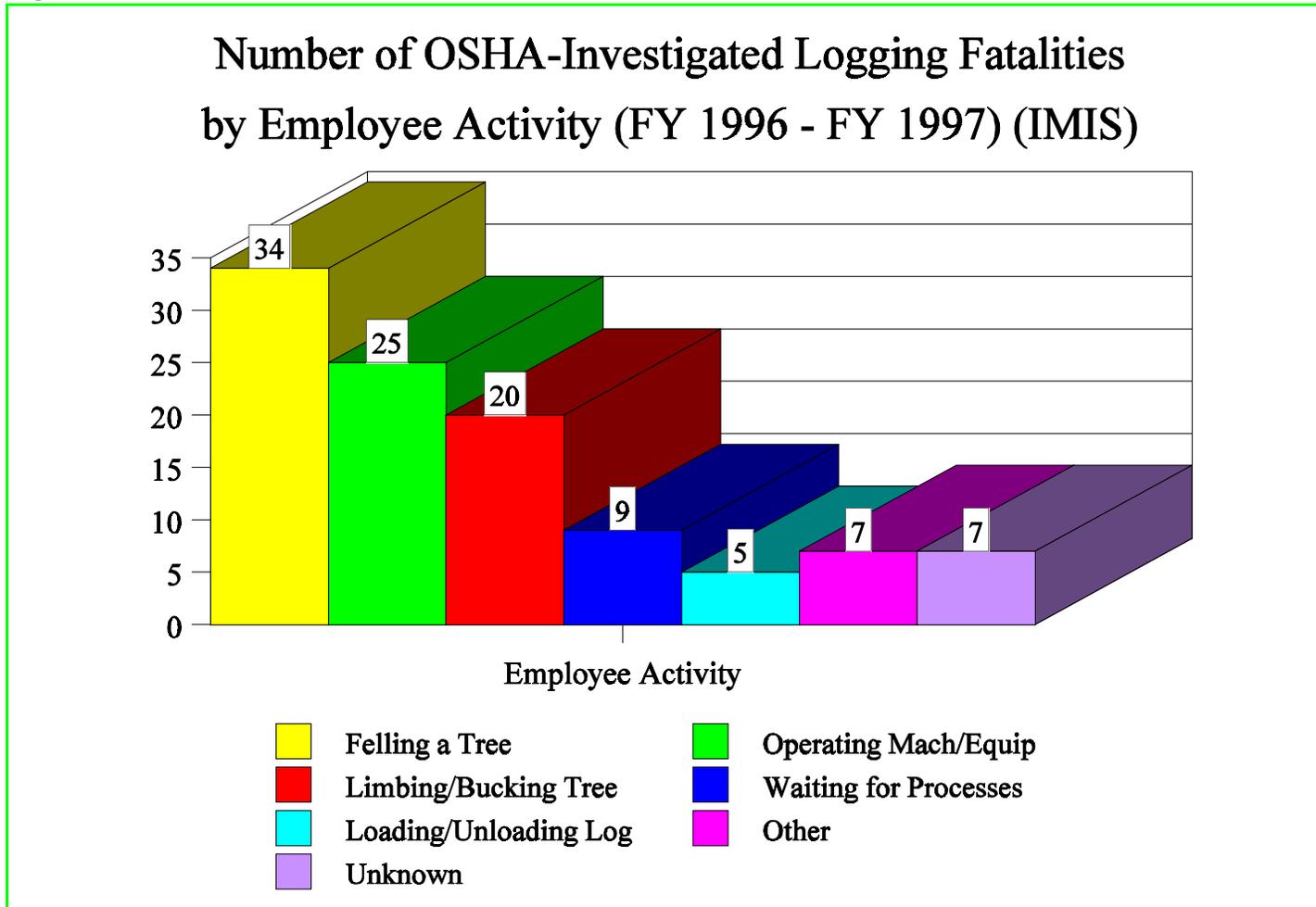


Figure 15

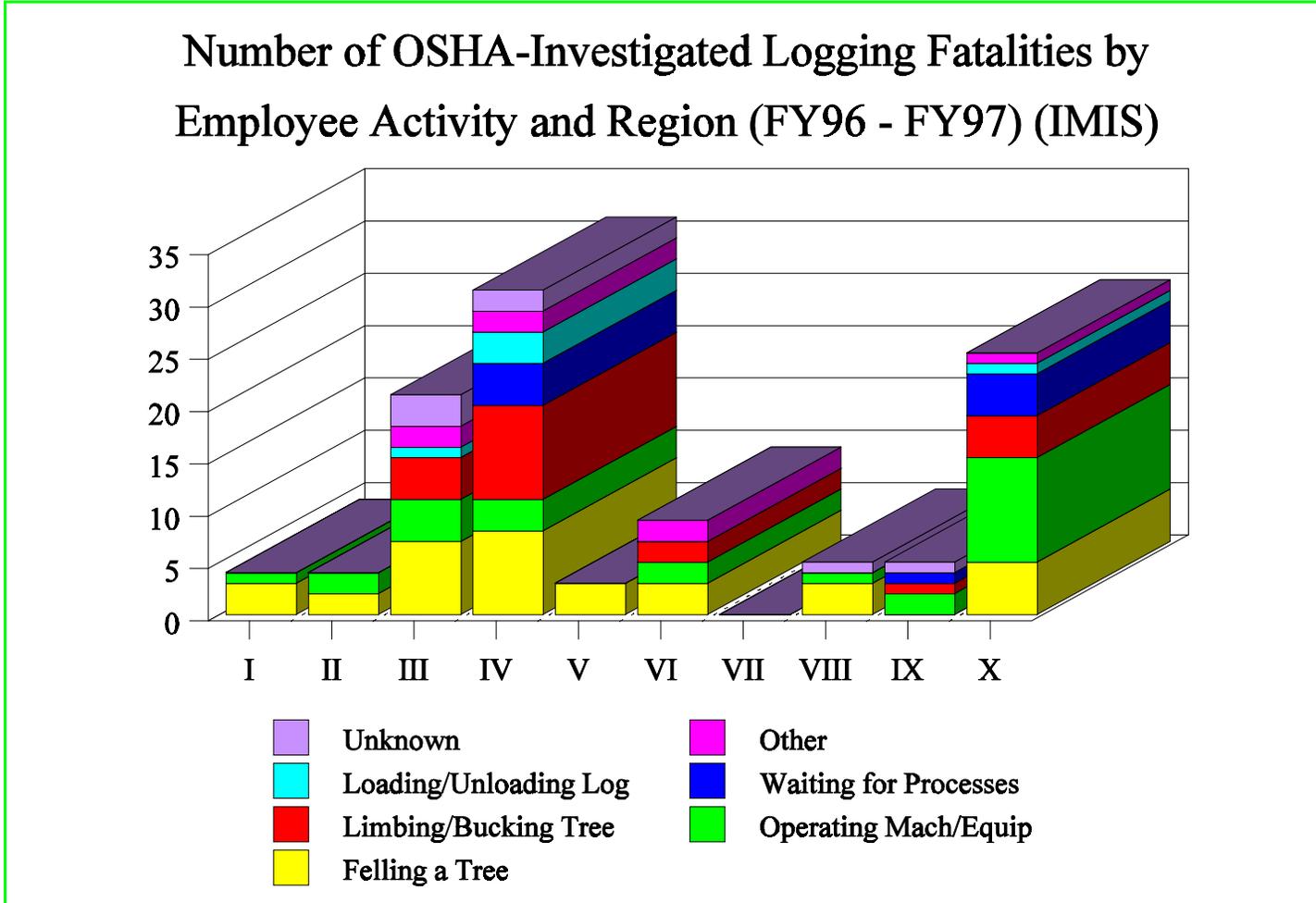


Figure 16

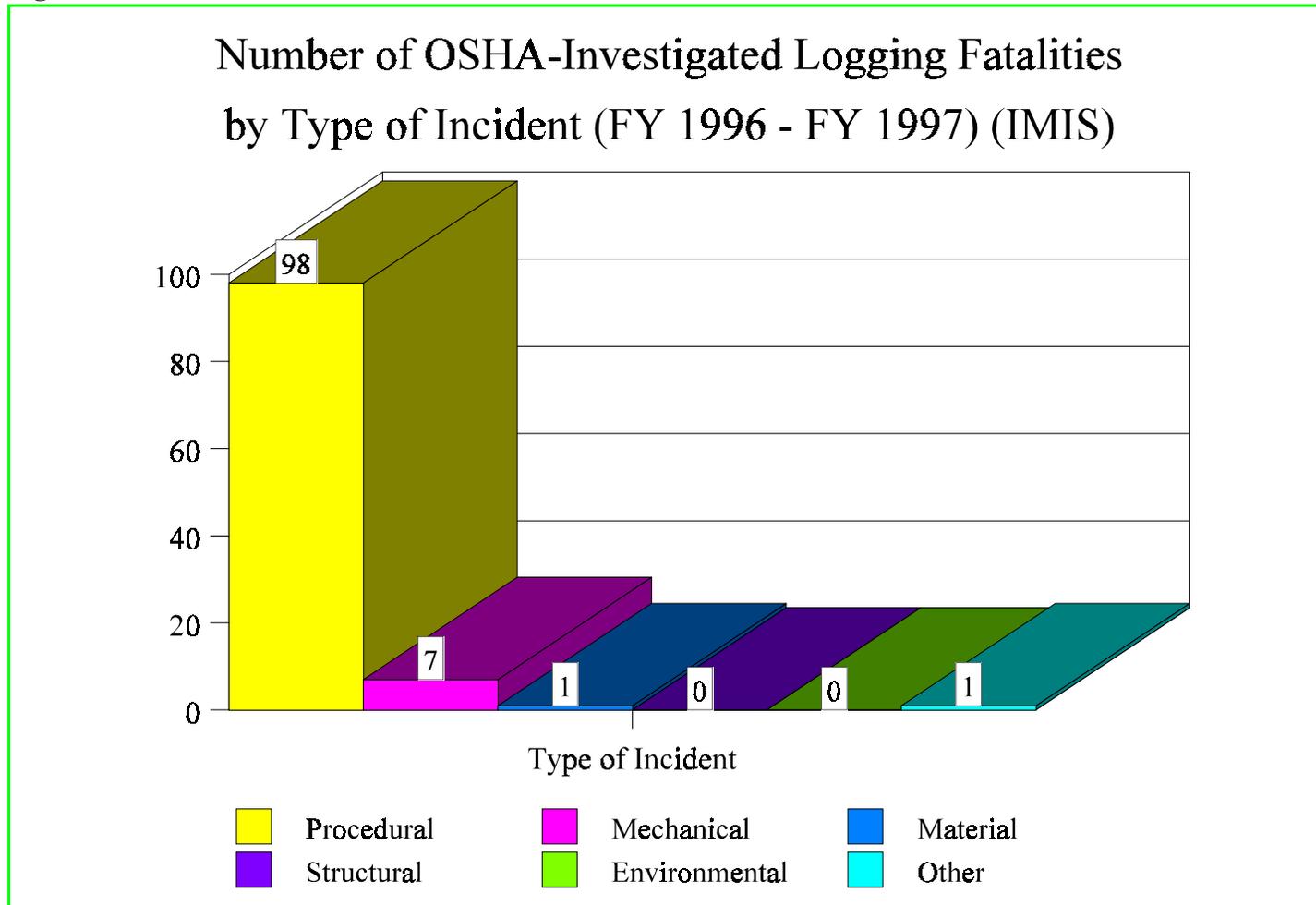


Figure 17

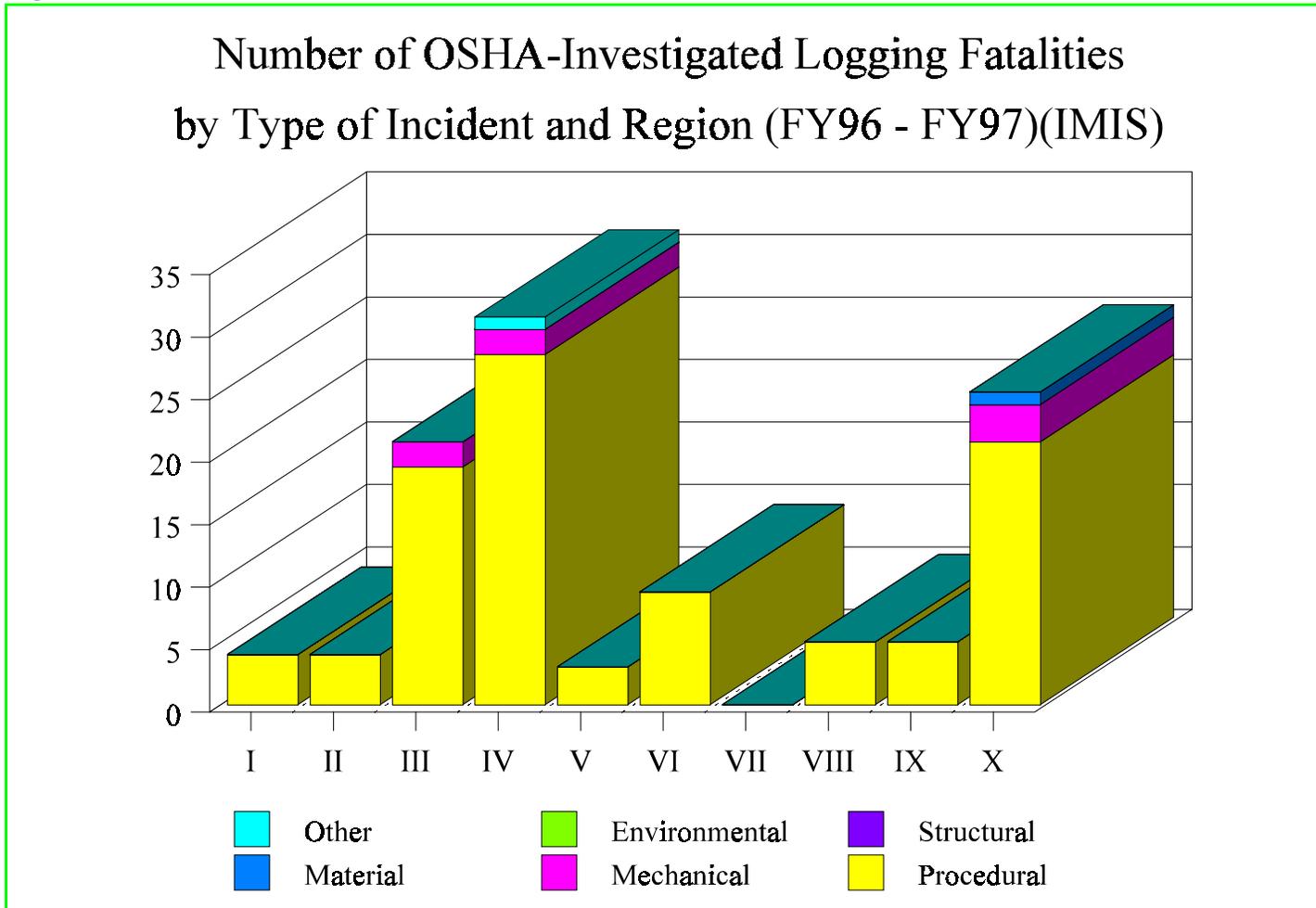


Figure 18

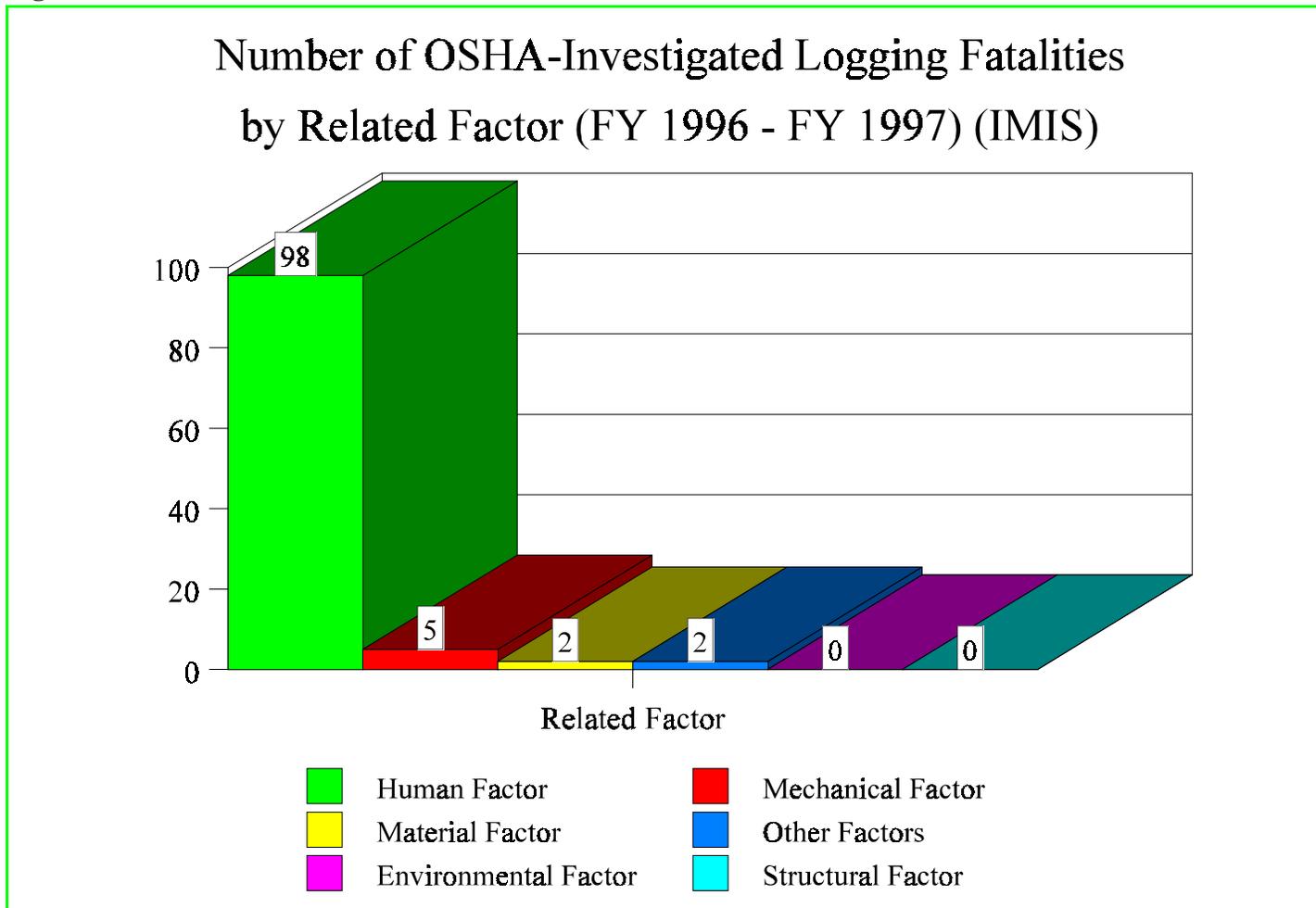


Figure 19

Number of OSHA-Investigated Logging Fatalities by Related Factor and Region (FY96 - FY97) (IMIS)

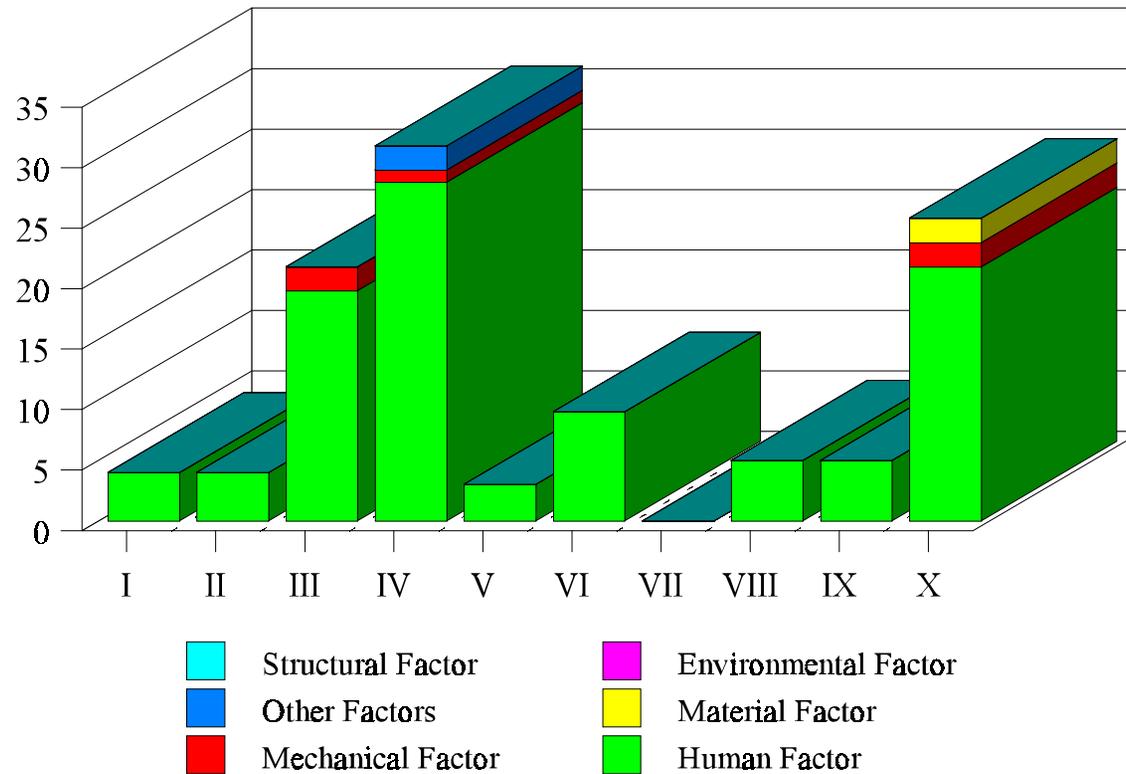


Figure 20

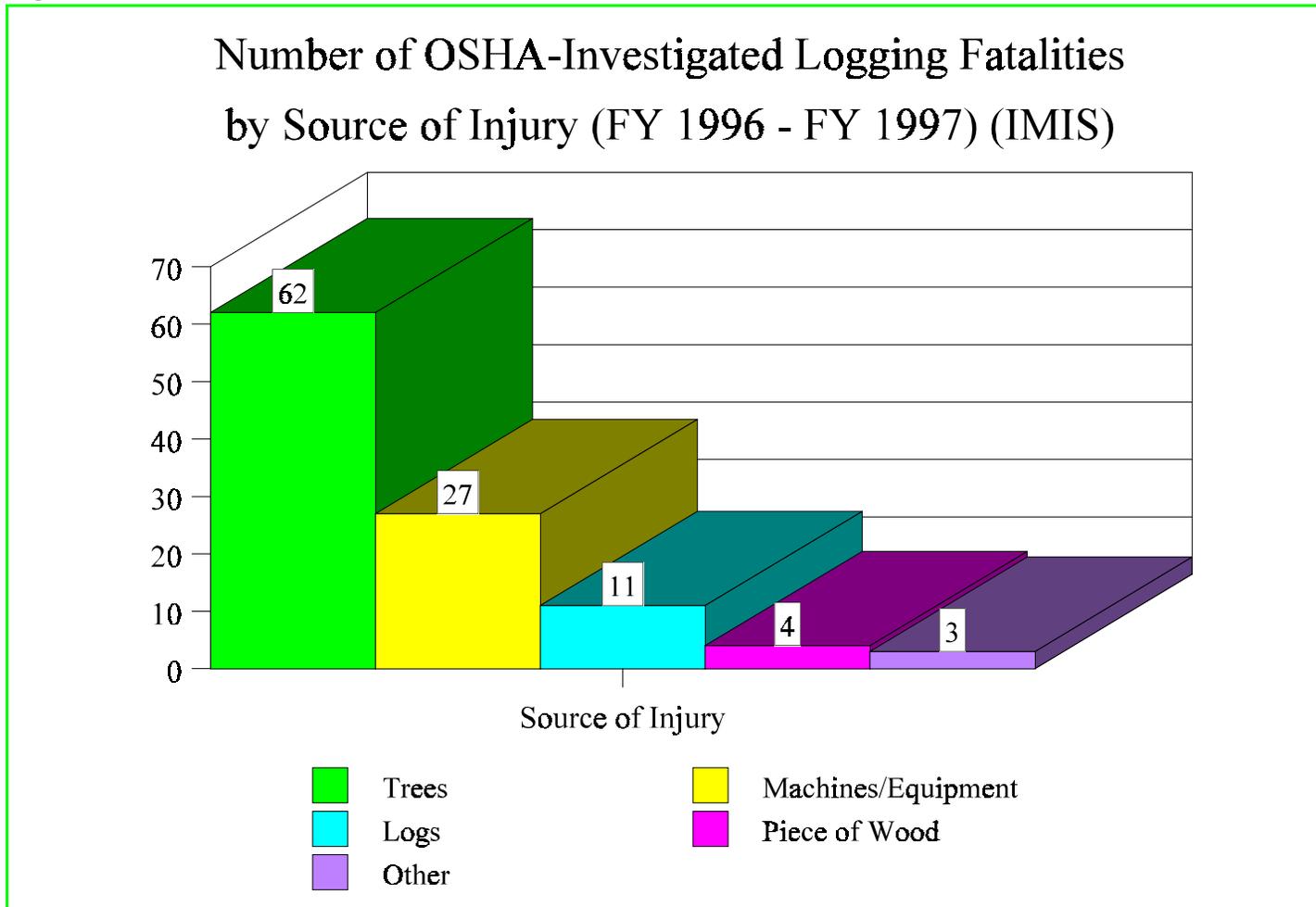


Figure 21

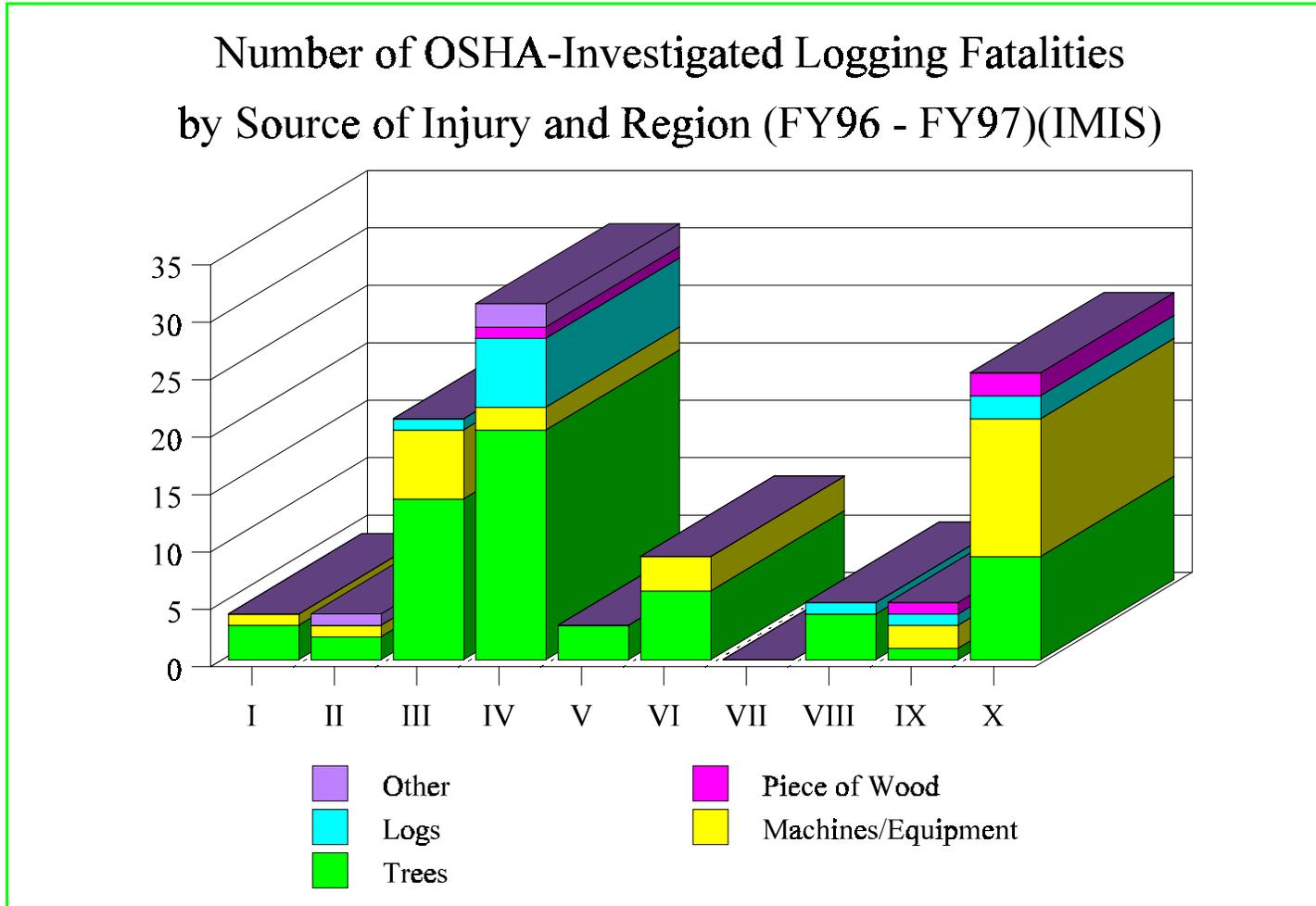


Figure 22

Number and Percent of OSHA-Investigated Logging Fatalities by Source of Fatal Action (FY96-97) (IMIS)

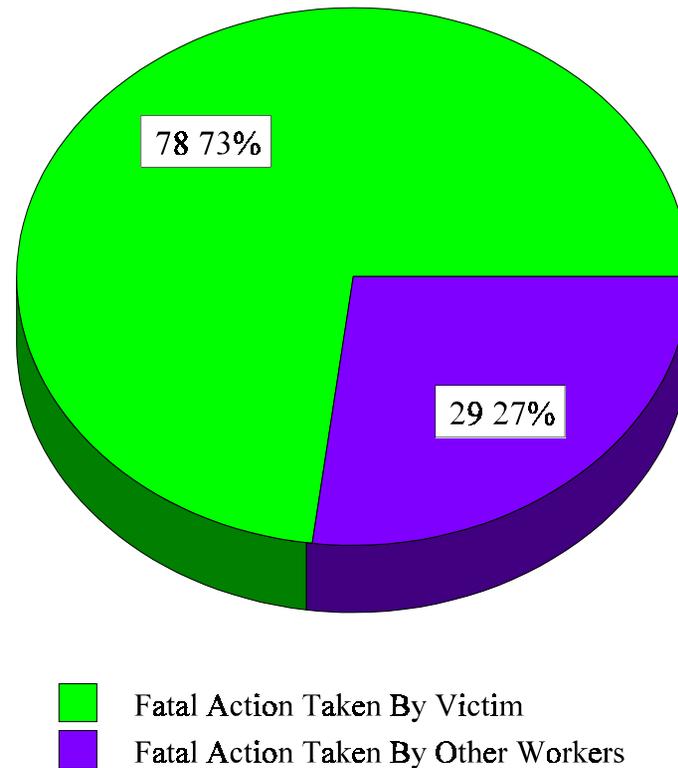


Figure 23

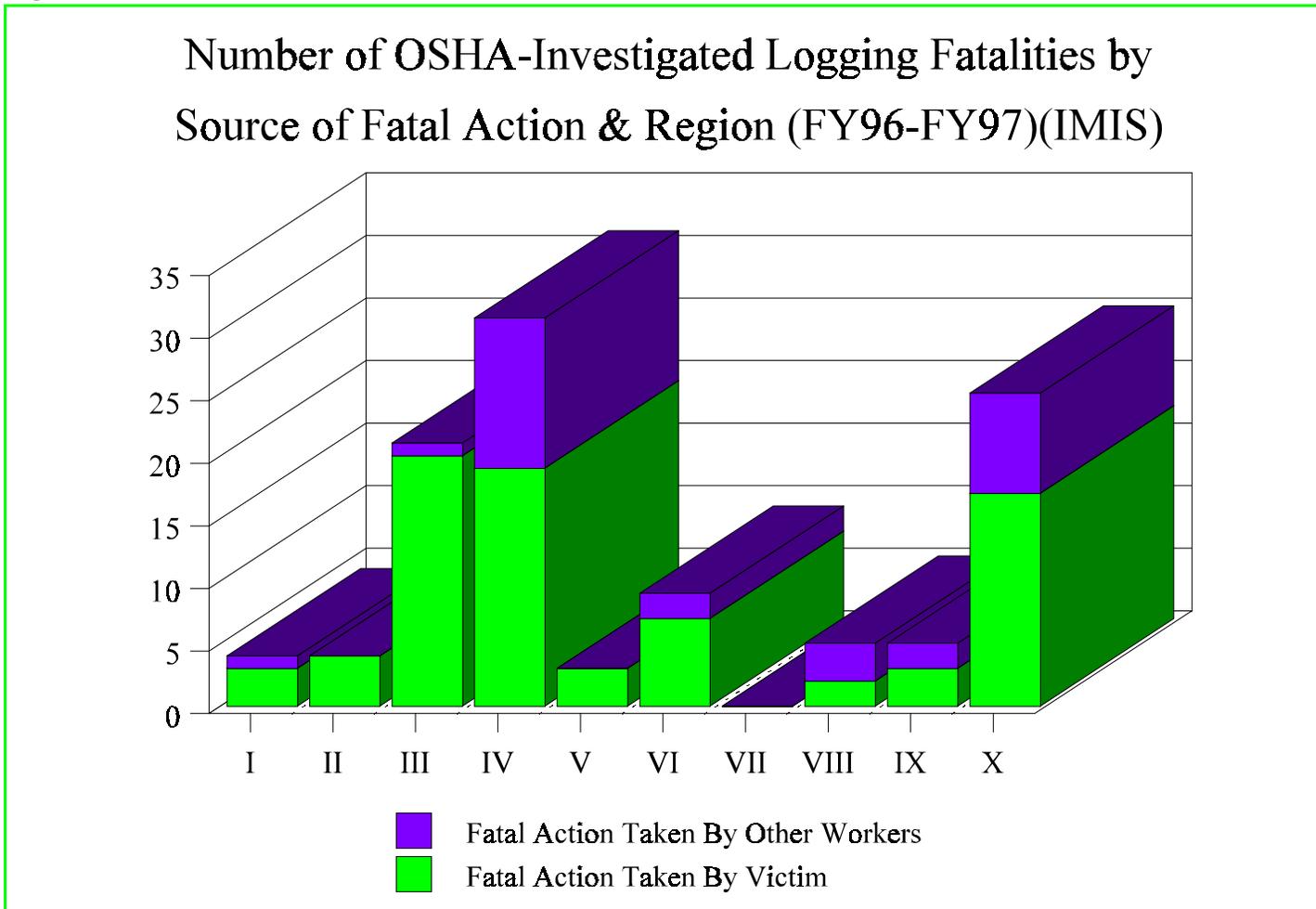
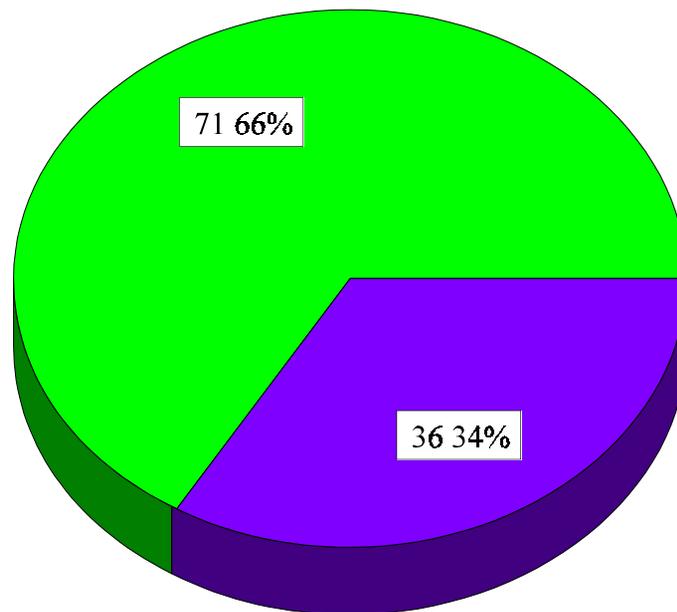


Figure 24

Number and Percent of OSHA-Investigated Logging Fatalities by Work Pattern (FY 1996-FY 1997) (IMIS)



- Victim Was Working Alone
- Victim Was Working With Others

Figure 25

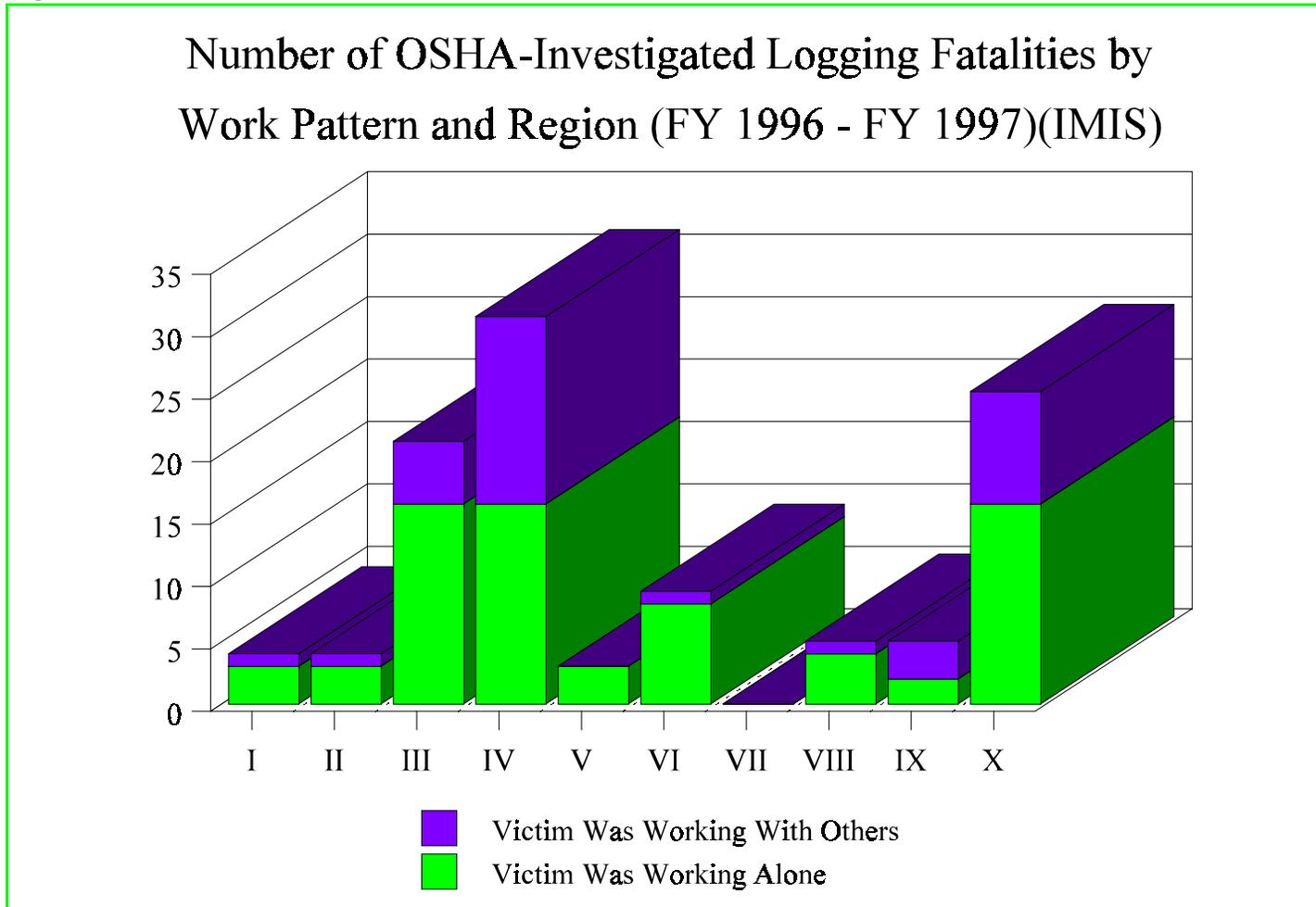
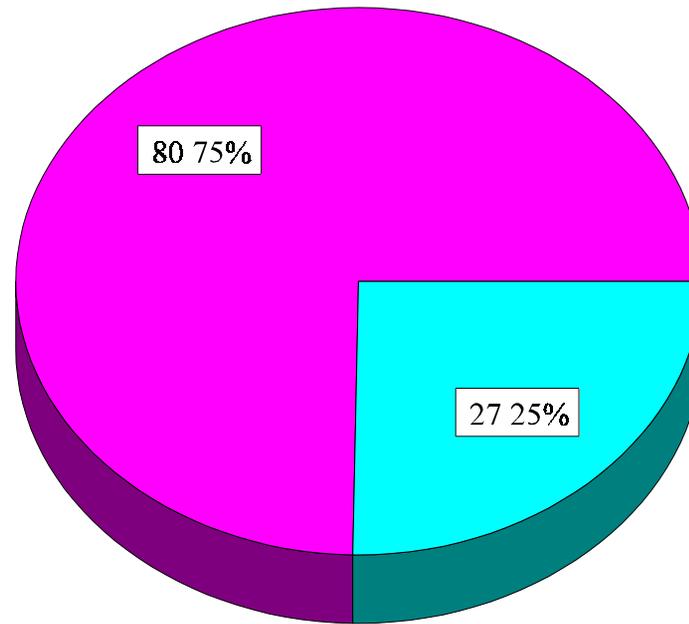


Figure 26

**Number and Percent of OSHA Logging Fatality
Investigations Resulting in Citations (FY96-97) (IMIS)**



- Investigations Resulting in Citations
- Investigations Resulting in No Citations

Figure 27

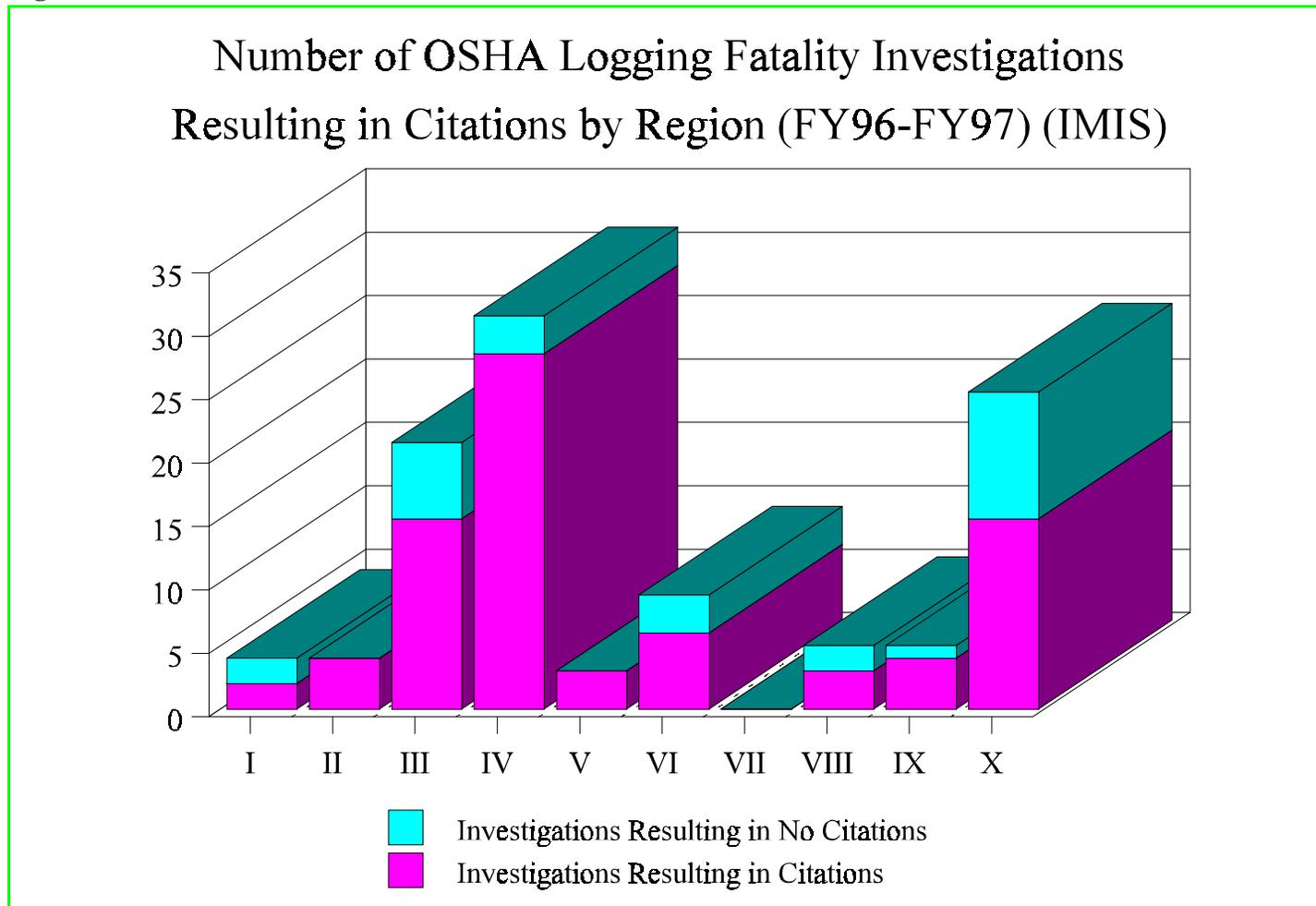
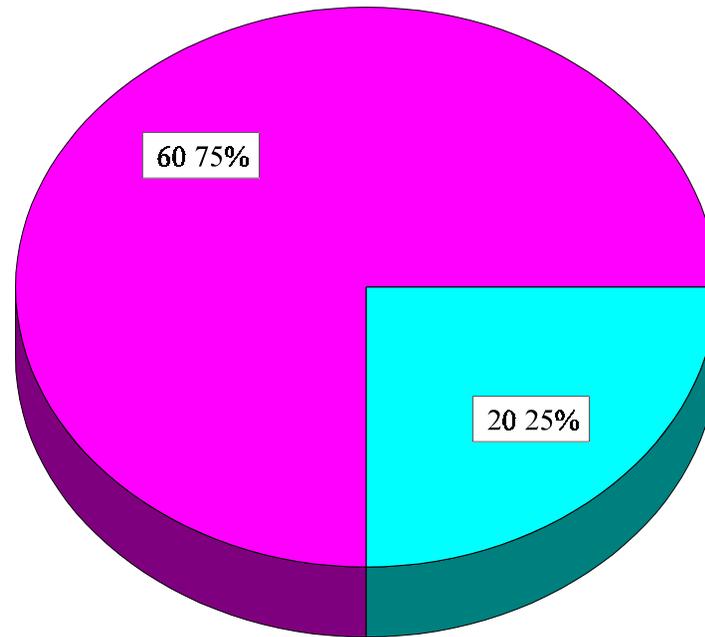


Figure 28

**Number/Percent of OSHA-Investigated Logging Fatalities
With Violations Related to Fatal Incident (FY96-97)(IMIS)**



- Investigations With Violations Related to Fatal Incident
- Investigations With No Violations Related to Fatal Incident

Figure 29

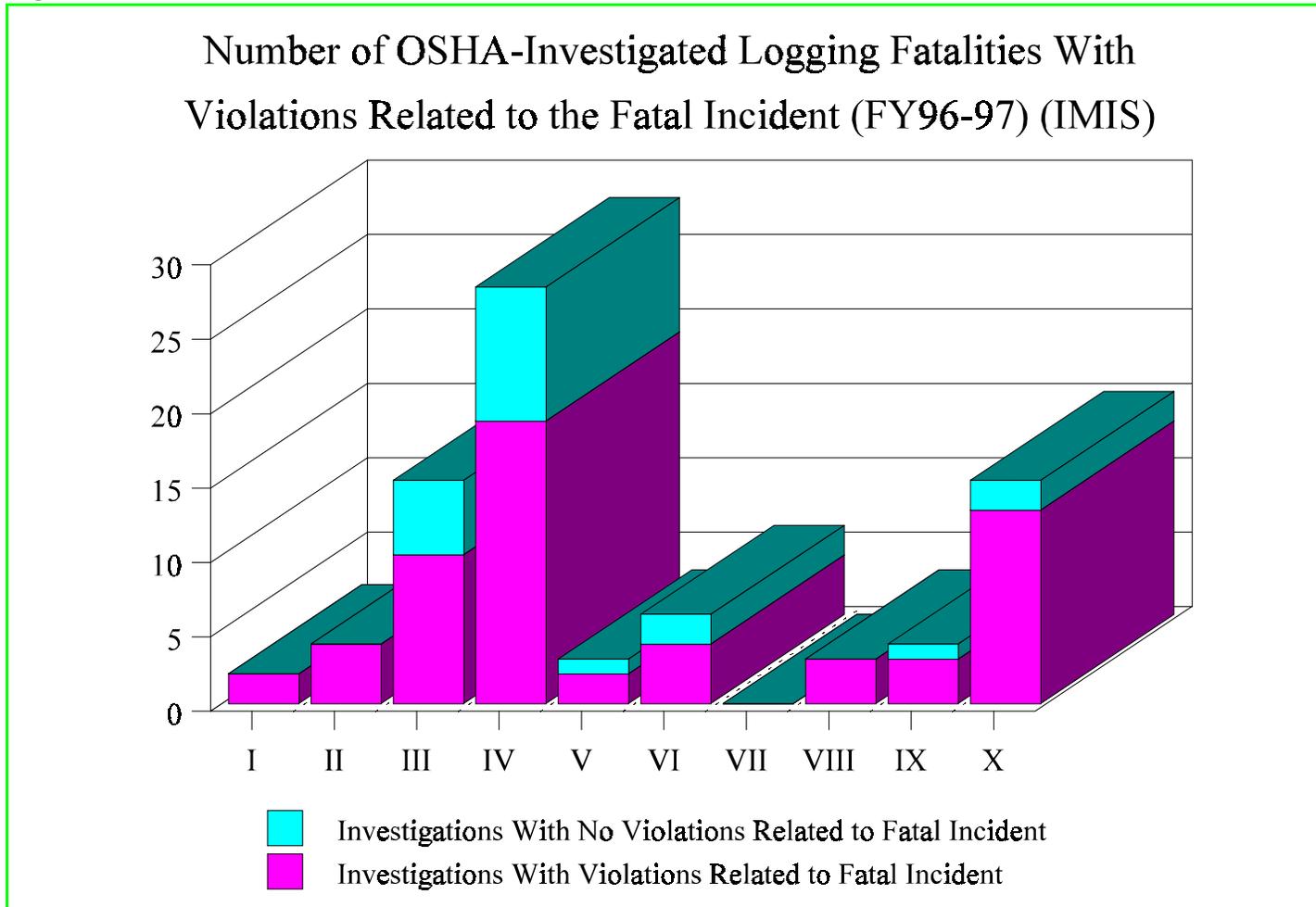


Figure 30

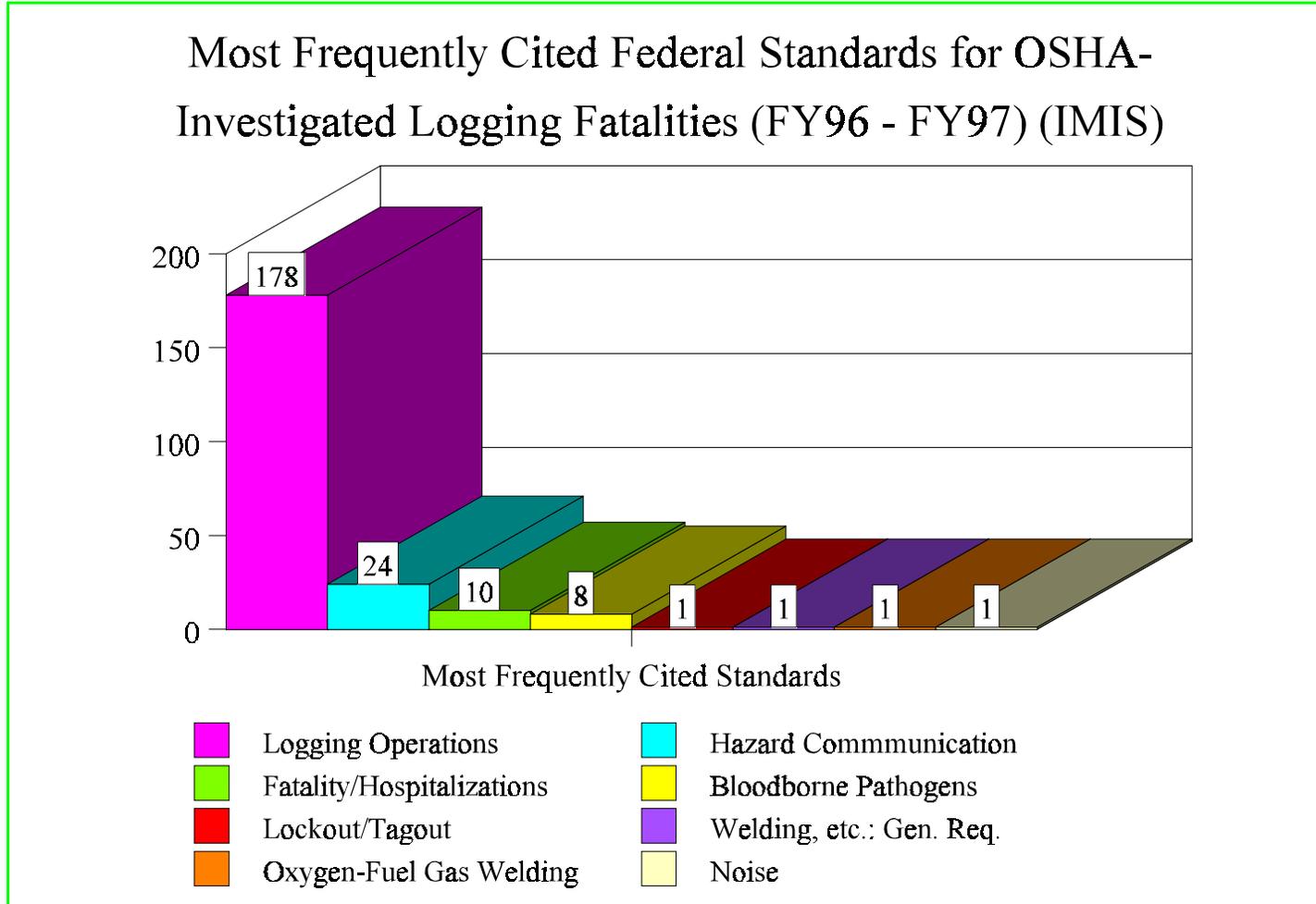


Figure 31

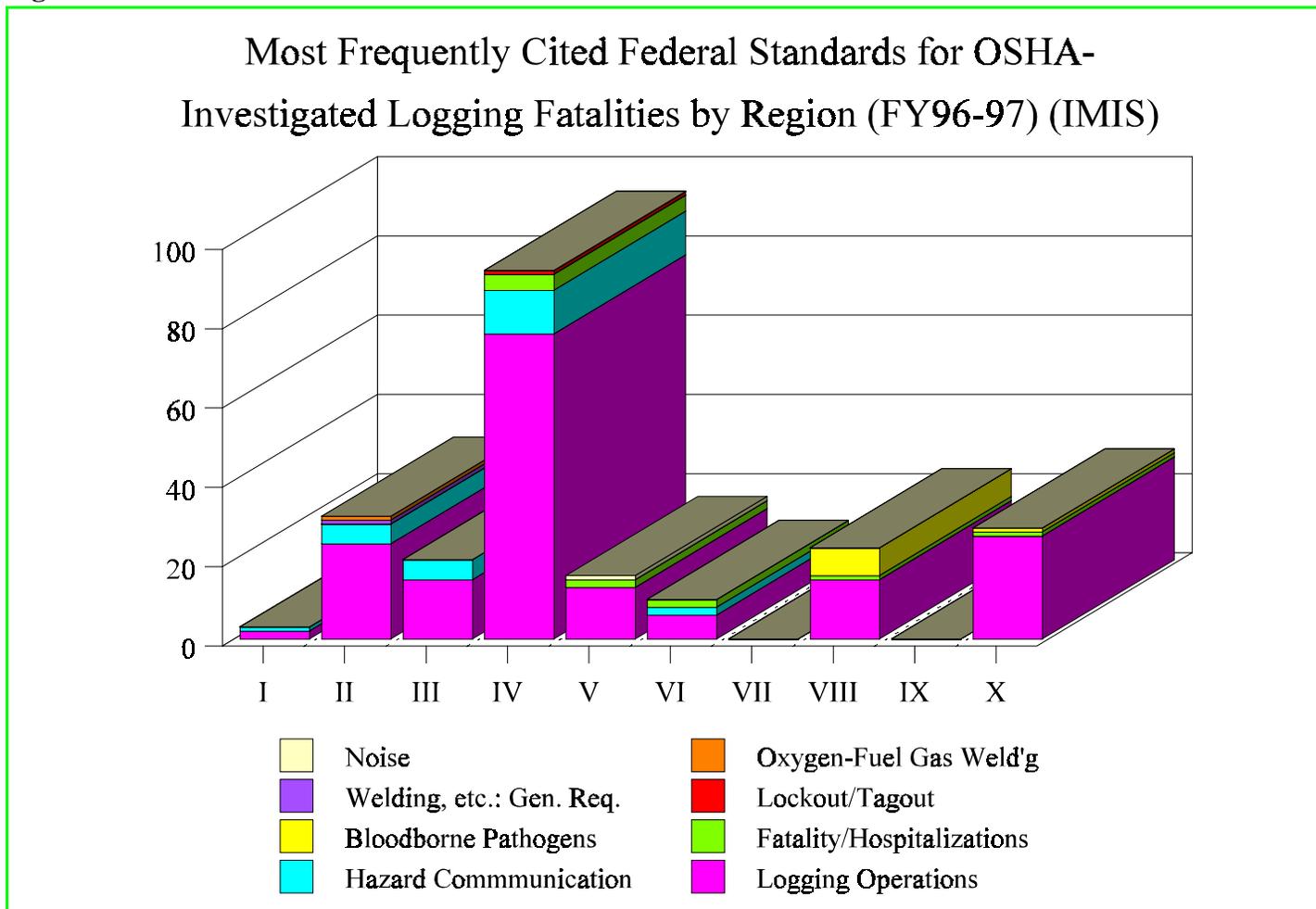


Figure 32

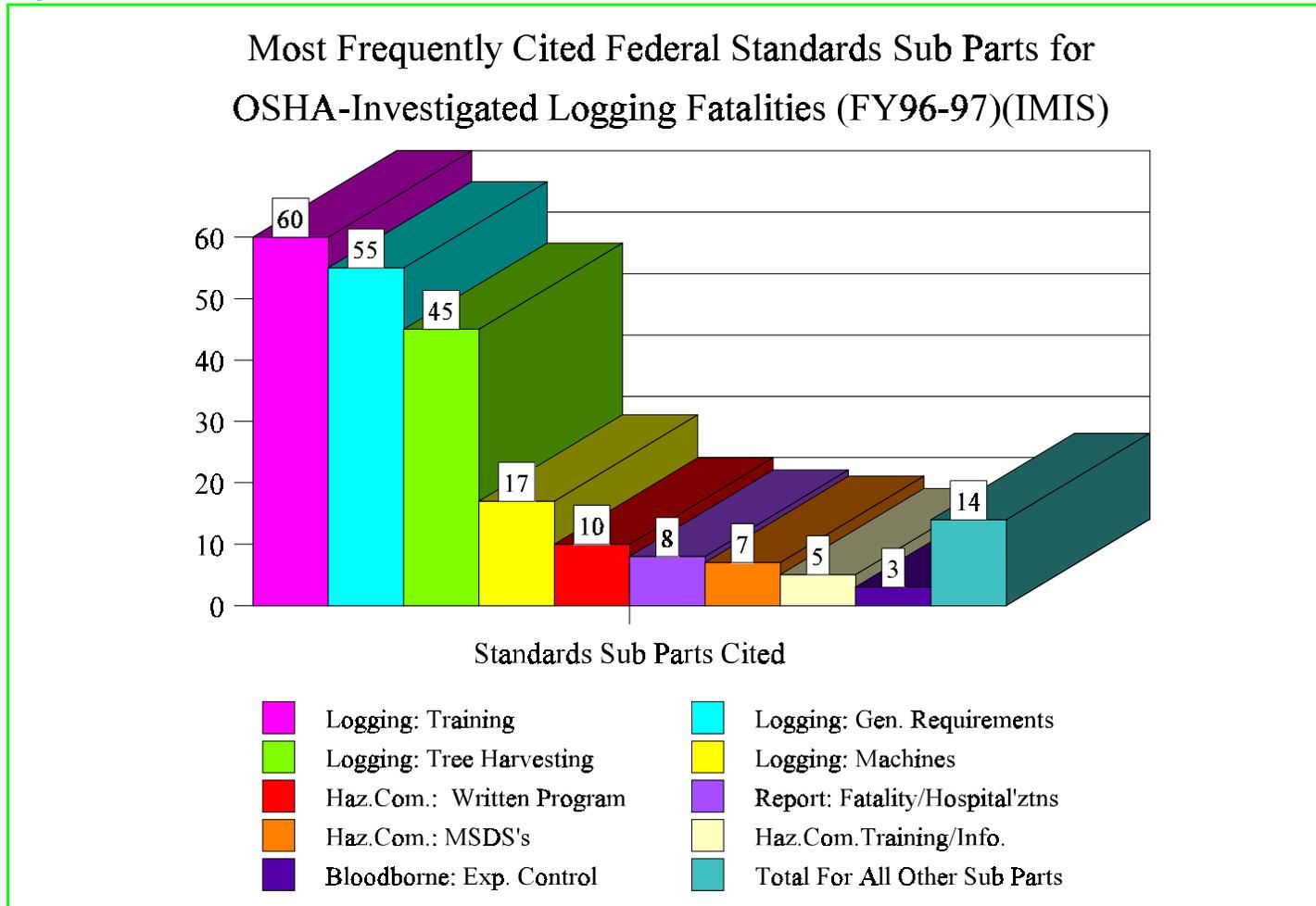


Figure 33

