

SKI AREA AVALANCHE CONTROL  
A SUMMARY OF METHODS, PROCEDURES AND MANPOWER

Larry Heywood<sup>1</sup>  
Carolyn Craig<sup>2</sup>

ABSTRACT

This past winter forty nine U.S. ski areas were sent questionnaires regarding their avalanche control program. The questionnaire surveyed a variety of issues and aspects of ski area avalanche work, including explosives, control techniques, rescue issues, boundary policies, training, control costs, wages, forecasting procedures and other related subjects. Thirty six ski areas returned completed questionnaires. Included in those responding were most of the U.S. ski areas with well developed avalanche control programs. This paper summarizes the responses to the questionnaire.

INTRODUCTION

The Ski Area Committee of the American Association of Avalanche Professionals based on input from the general membership felt a need existed for better interchange and communication between ski area avalanche workers. In an effort to act as a vehicle for this interchange, the committee elected, as a first step, to survey ski areas engaged in avalanche work.

The committee developed a questionnaire which covered in detail, "What are we doing?", "How are we doing it?", "Is there a better way?", and much more. This questionnaire was mailed to forty nine U.S. ski areas in the spring of 1992. The cover letter and questionnaire instructions requested participants complete the questionnaire as accurately as possible with honest answers and best estimates.

The intent of the committee, as explained to participants in the cover letter, was to summarize the questionnaires findings and report them to the participants. The committee hoped to include all U.S. ski areas engaged in avalanche work. As of this date, November 1992, the committee has not yet received enough returned questionnaires to consider the survey complete. The survey will

---

<sup>1</sup> Ski Patrol Director, Alpine Meadows Ski Corporation,  
Tahoe City, California

<sup>2</sup> Safety Coordinator, Alpine Meadows Ski Corporation,  
Tahoe City, California

continue through the winter of 1992-1993. When the survey is complete, the resulting summary and report will be presented to participating ski areas.

The questionnaire was subdivided in to seven sections. These include:

Avalanche Control  
Explosives  
Rescue  
Data Collection; Forecasting; Computers  
Boundary and Closed Area Policy  
Training  
Money and Manpower

#### THE PARTICIPANTS

The following Ski Areas returned questionnaires and are included in the graphical summaries.

Alpenglow, Alaska	Winter Park, Colo.
Alyeska, Alaska	Big Mountain, Id.
Alpine Meadows, Calif.	Grand Targhee, Id.
Bear Valley, Calif.	Sun Valley, Id.
Heavenly Valley, Calif.	Big Sky, Mt.
Kirkwood, Calif.	Bridger Bowl, Mt.
Mammoth Mt., Calif.	Mt Hood Meadows, Or.
Squaw Valley, Calif.	Alta, Utah
Sugar Bowl, Calif.	Deer Valley, Utah
Aspen Highlands, Colo.	Park City, Utah
Breckenridge, Colo.	Snowbasin, Utah
Copper Mt., Colo.	Snowbird, Utah
Keystone, Colo.	Sundance, Utah
Loveland, Colo.	Crystal Mt., Wa.
Purgatory, Colo.	Mission Ridge, Wa.
Snowmass, Colo.	Ski Bluewood, Wa.
Telluride, Colo.	Stevens Pass, Wa.
Vail, Colo.	Jackson Hole, Wy.

#### THE FIGURES

The figures presented in this report are graphical summaries of a few of the questionnaire areas of inquiry. These represent only the questionnaires returned as of November 1992.

#### ACKNOWLEDGEMENTS

##### AAAP Ski Area Committee Members

Larry Heywood - Chairman  
Randy Elliott  
John Fagan

Kelly Klein  
Mark Mueller

# Seasonal Explosive Use (Pounds)

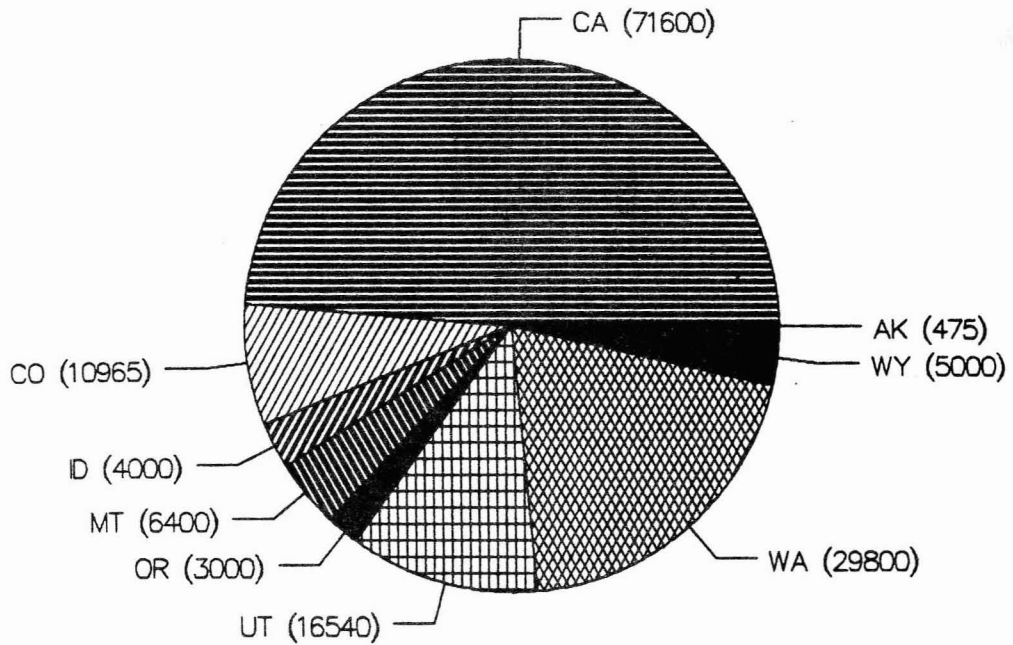


Figure 1

## SKI AREA SEASONAL EXPLOSIVE USE Eleven Largest Users

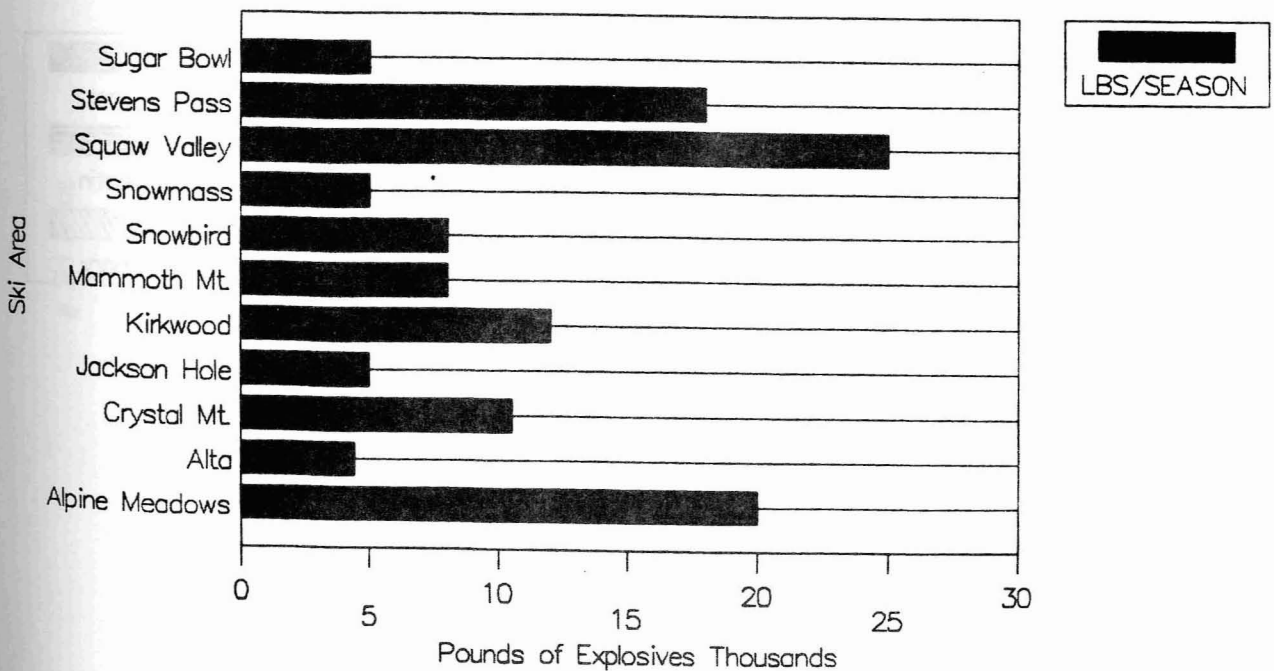


Figure 2

# TYPE OF EXPLOSIVE

Number of Ski Areas

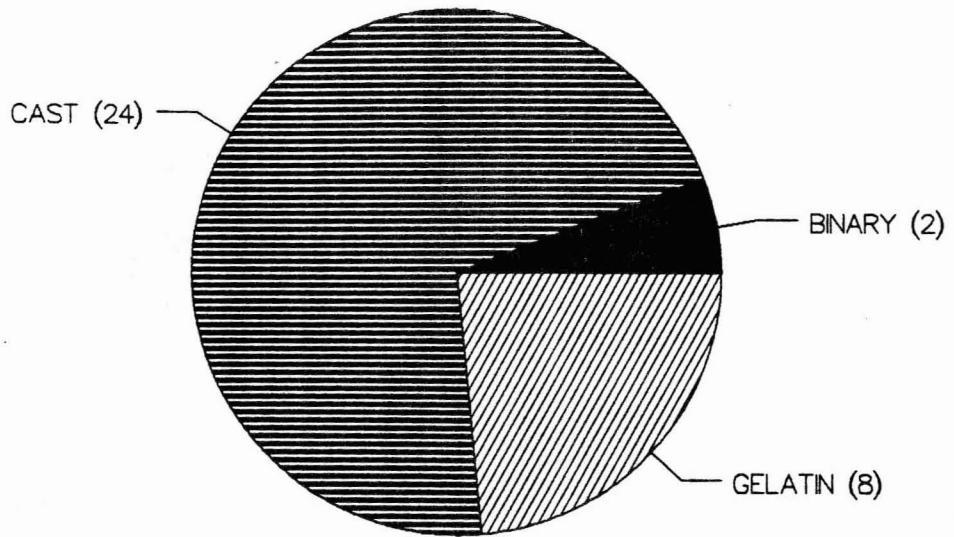
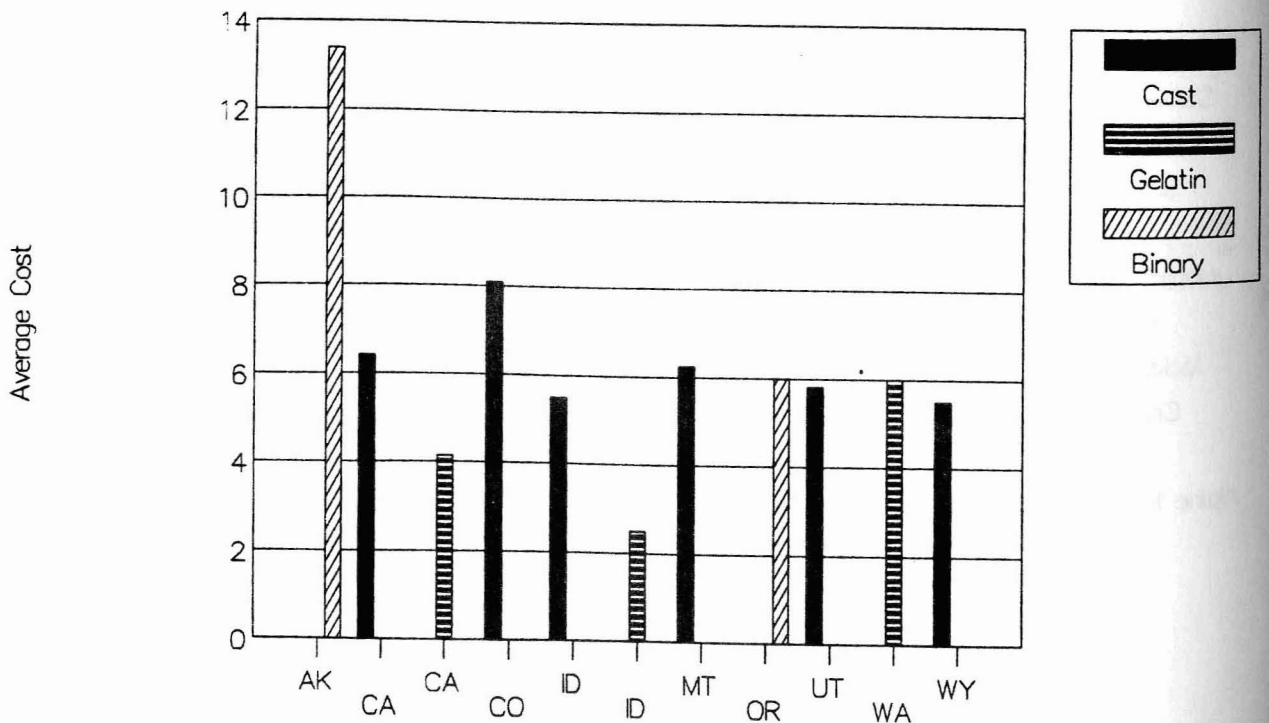


Figure 3

## COST OF STANDARD EXPLOSIVE CHARGE



State  
Figure 4  
194

# EXPLOSIVE ARMING

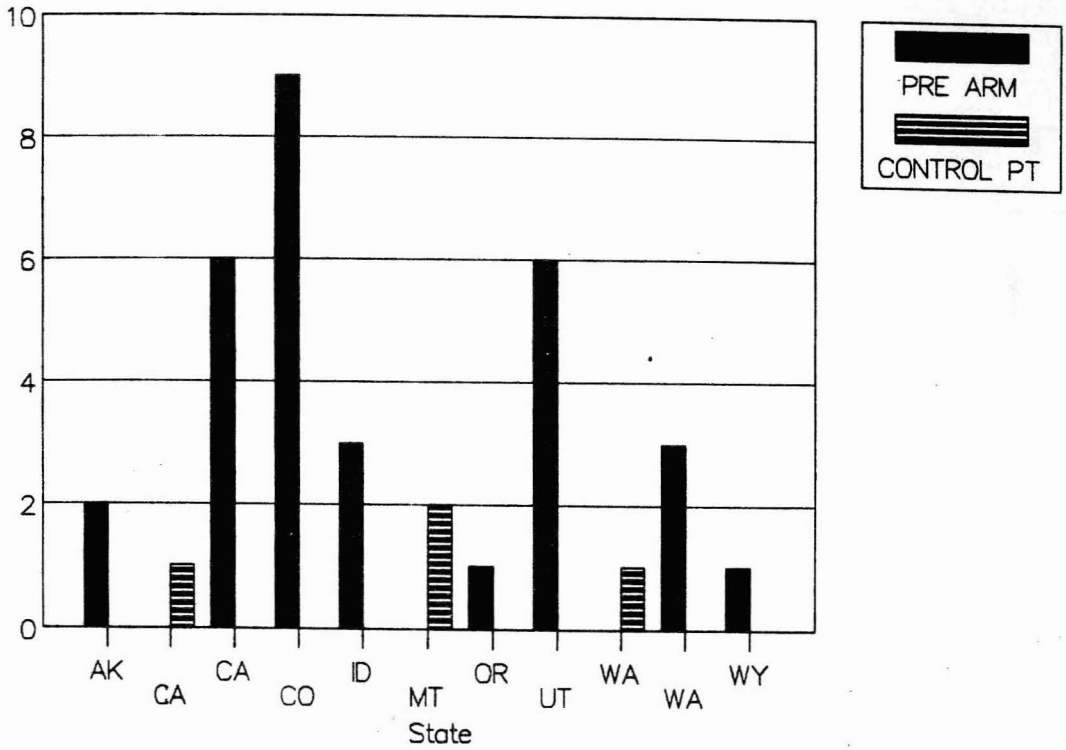


Figure 5

# FUSE LENGTH

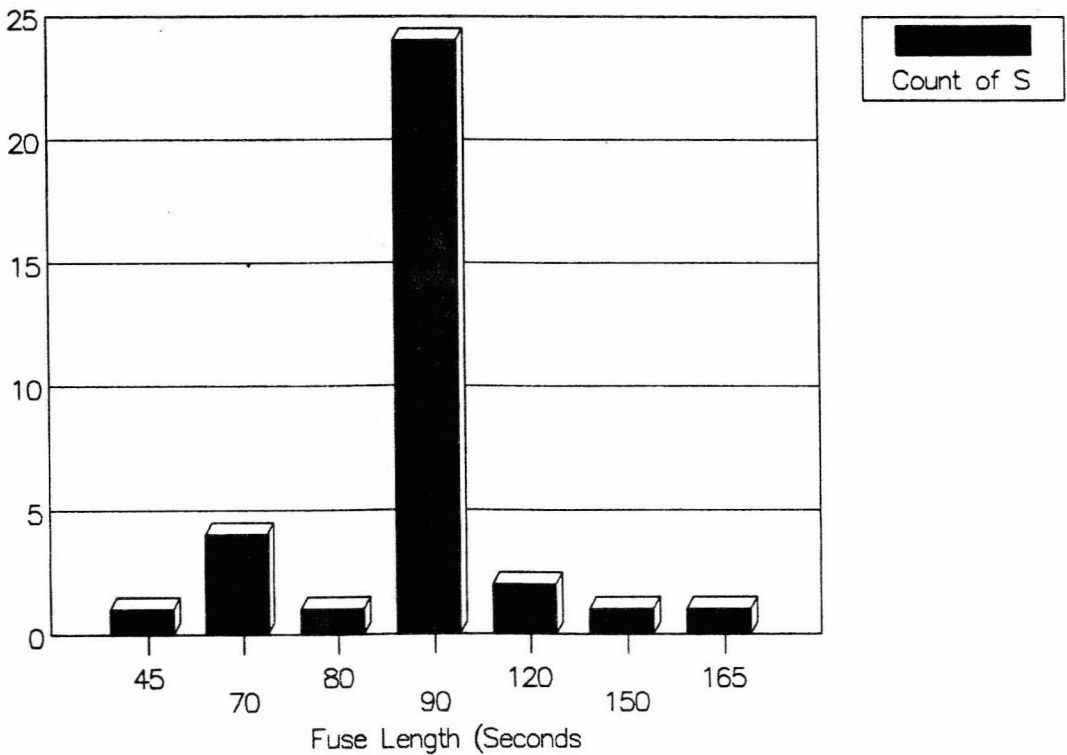


Figure 6

# 10LB Explosive Charges

## Frequency of Use

Number of Ski Areas

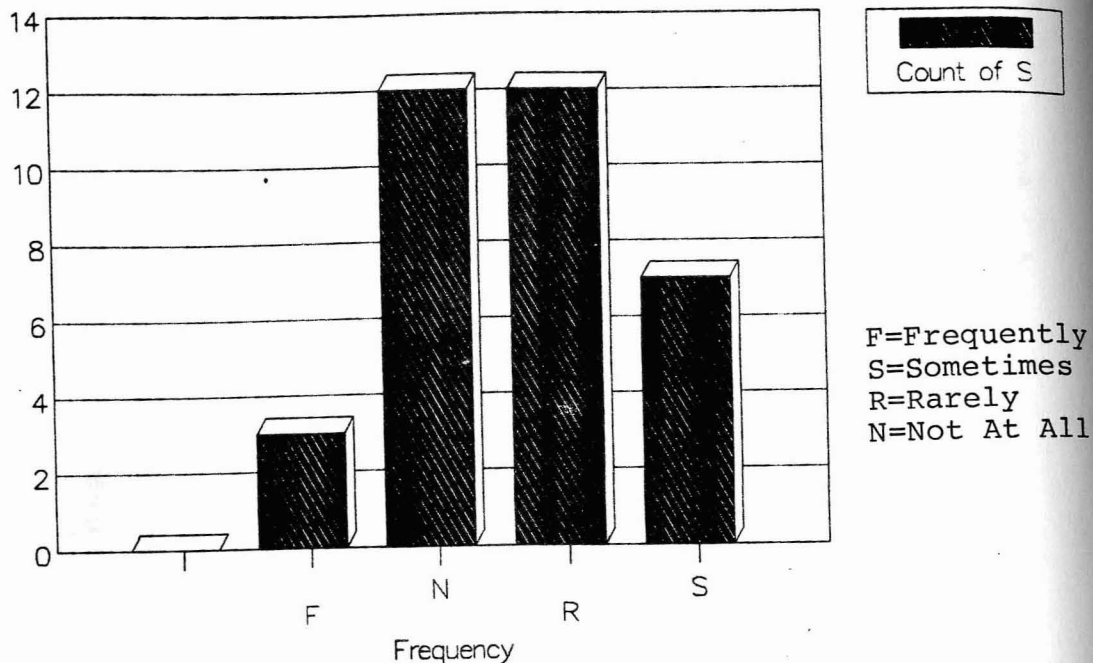


Figure 7

# <2LB EXPLOSIVE CHARGES

## Frequency of Use

Number of Ski Areas

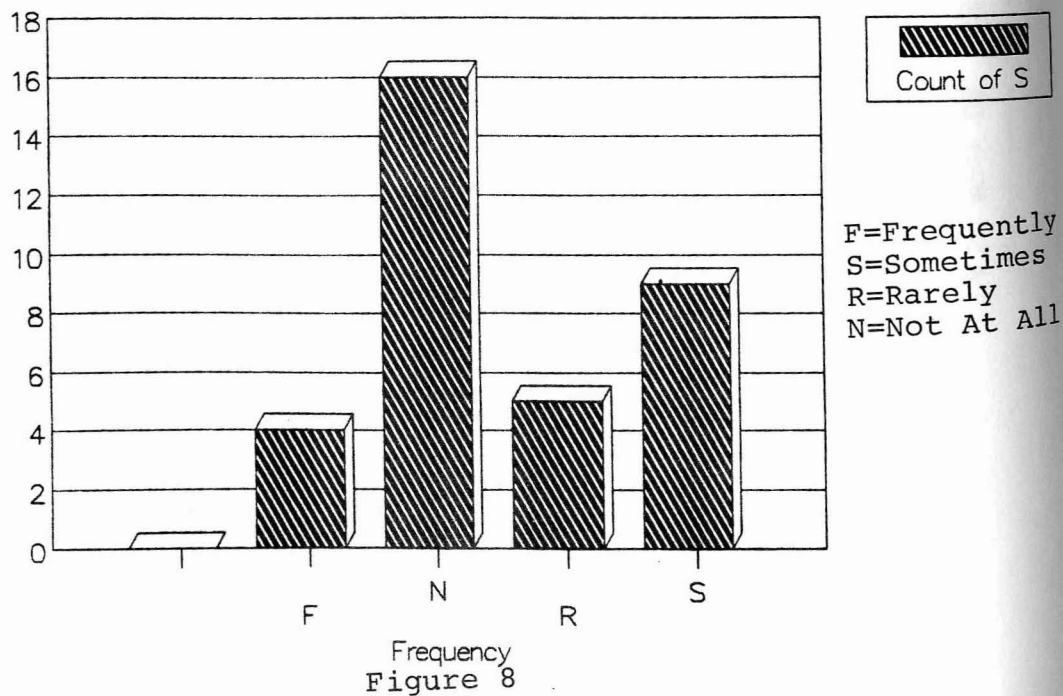


Figure 8

# AERIAL BLASTING

## Frequency of Use

Number of Ski Areas

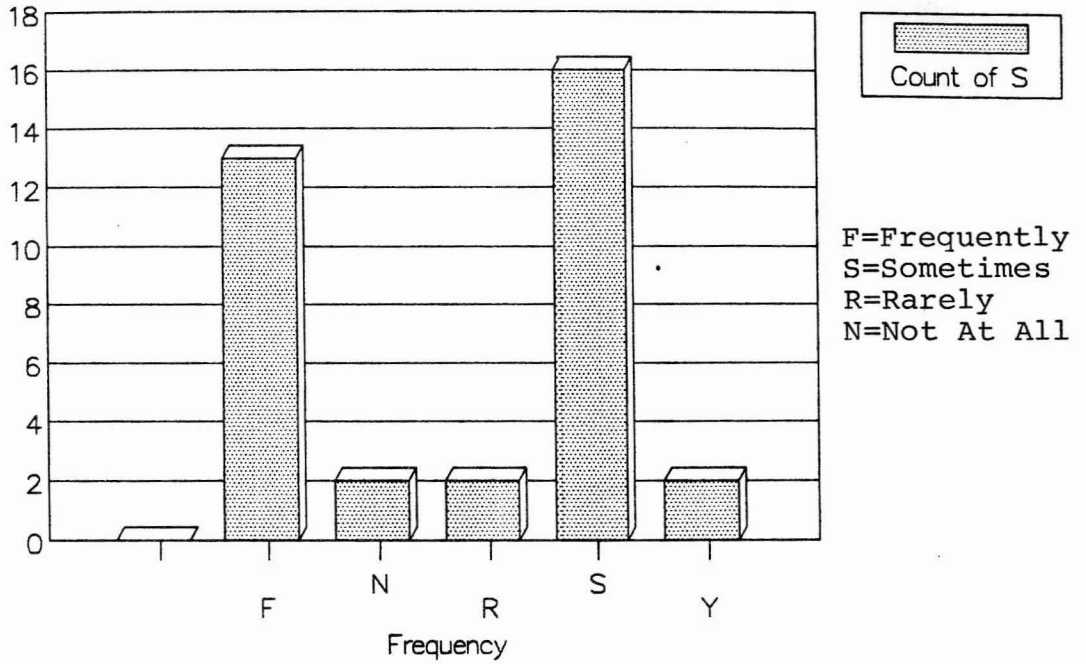
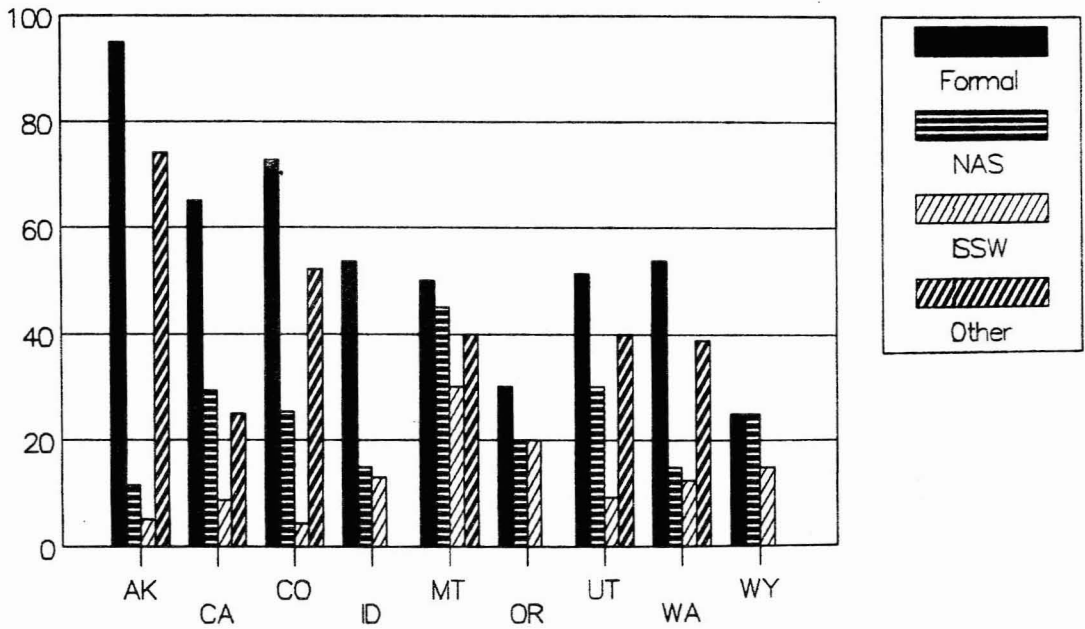


Figure 9

# AVALANCHE TRAINING

## % ATTENDANCE

% Personnel



State  
Figure 10

# AVALANCHE SCHOOLS

## % Attendance by State

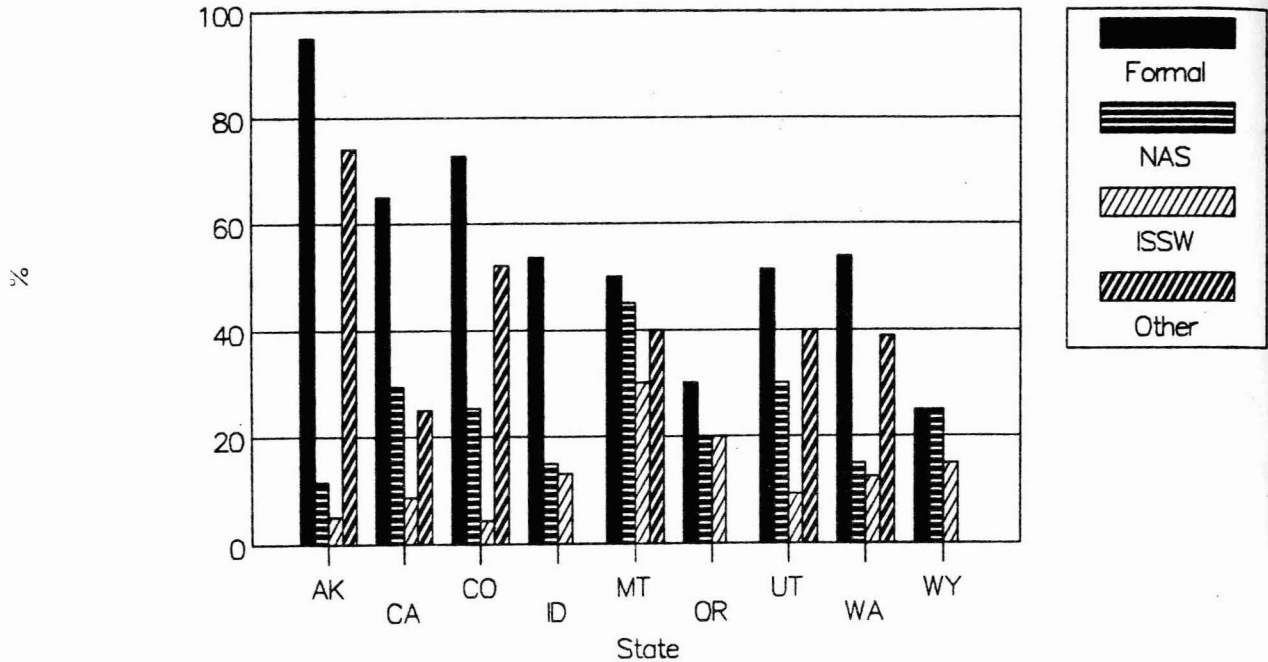


Figure 11

# AVALANCHE EDUCATION

## Annual \$ by State

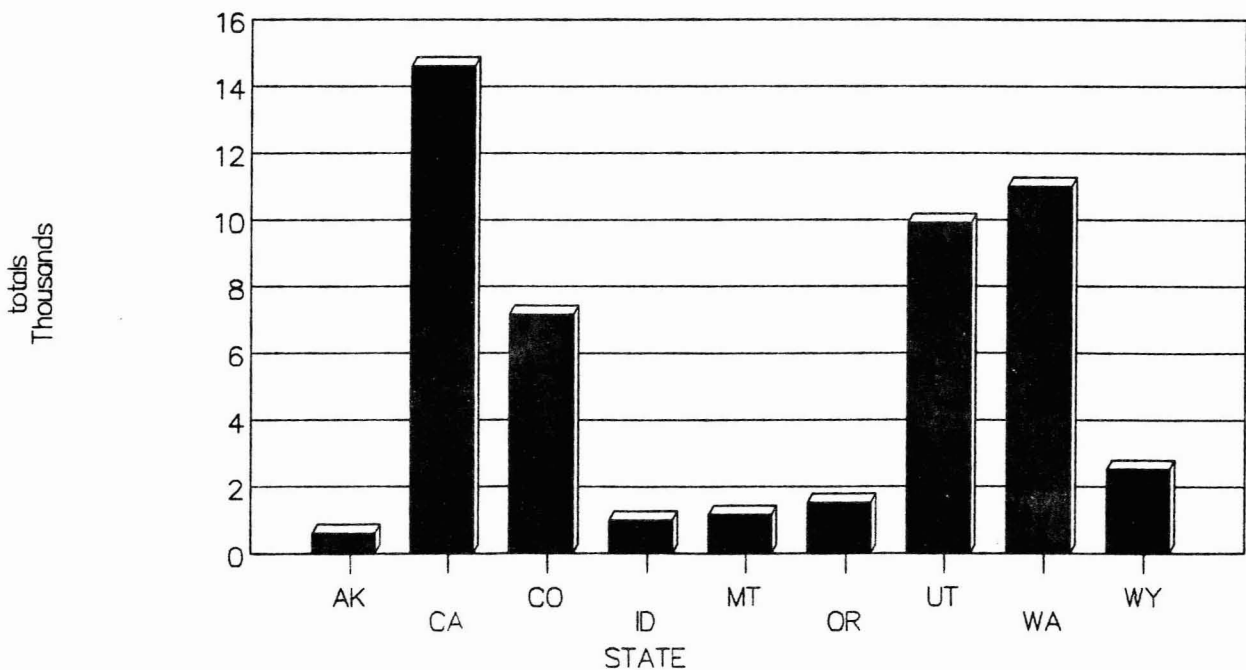
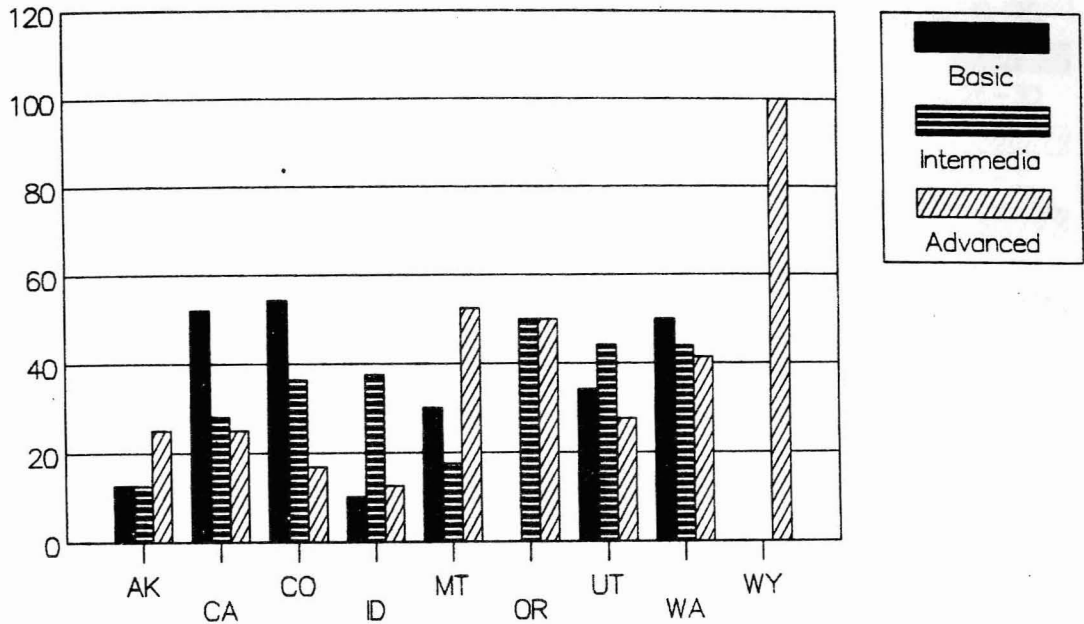


Figure 12



# SUPPORT FOR AVALANCHE TRAINING

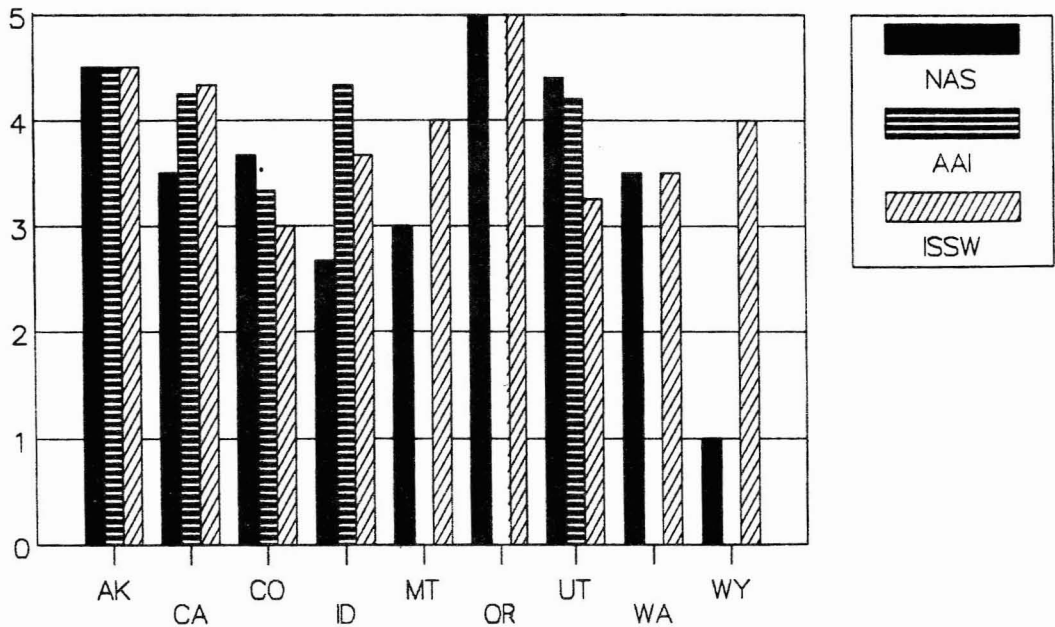
AVE. %



State  
Figure 13

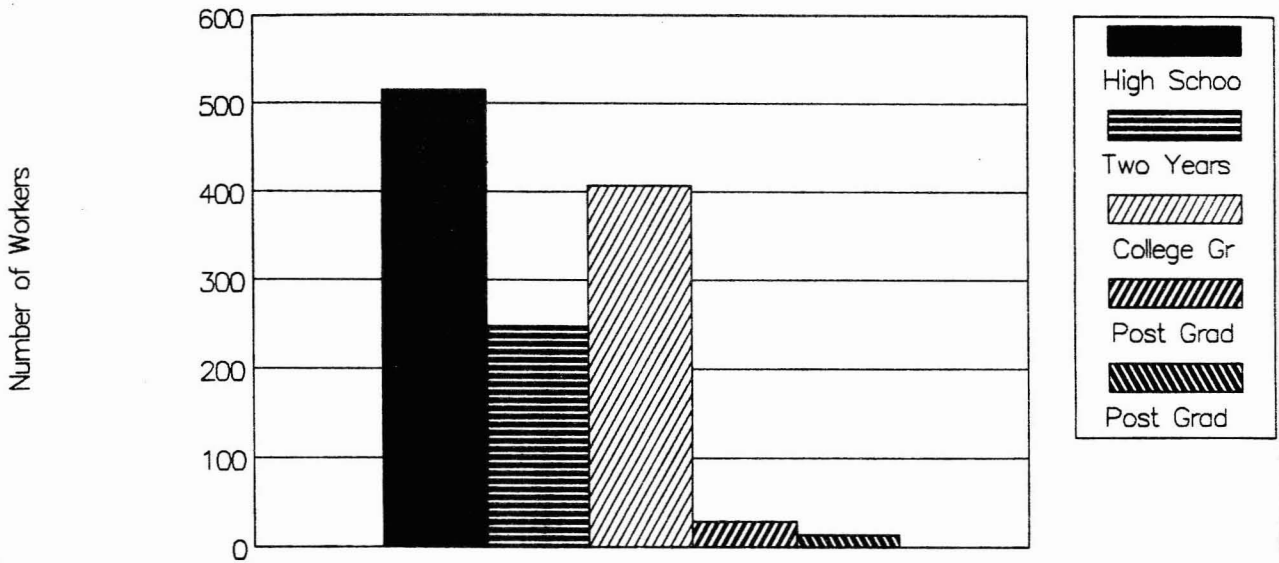
# AVALANCHE SCHOOL RATINGS

1=Poor, 5=Excellent



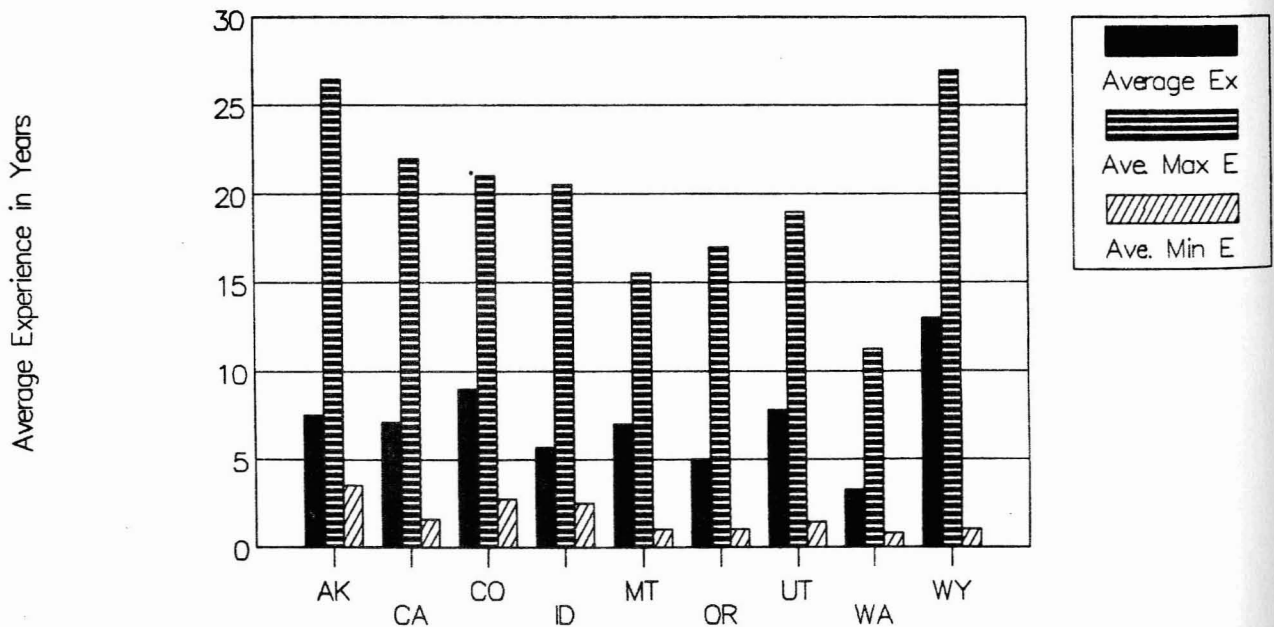
State  
Figure 14

# AVALANCHE WORKER EDUCATION LEVEL



Education Level  
Figure 15

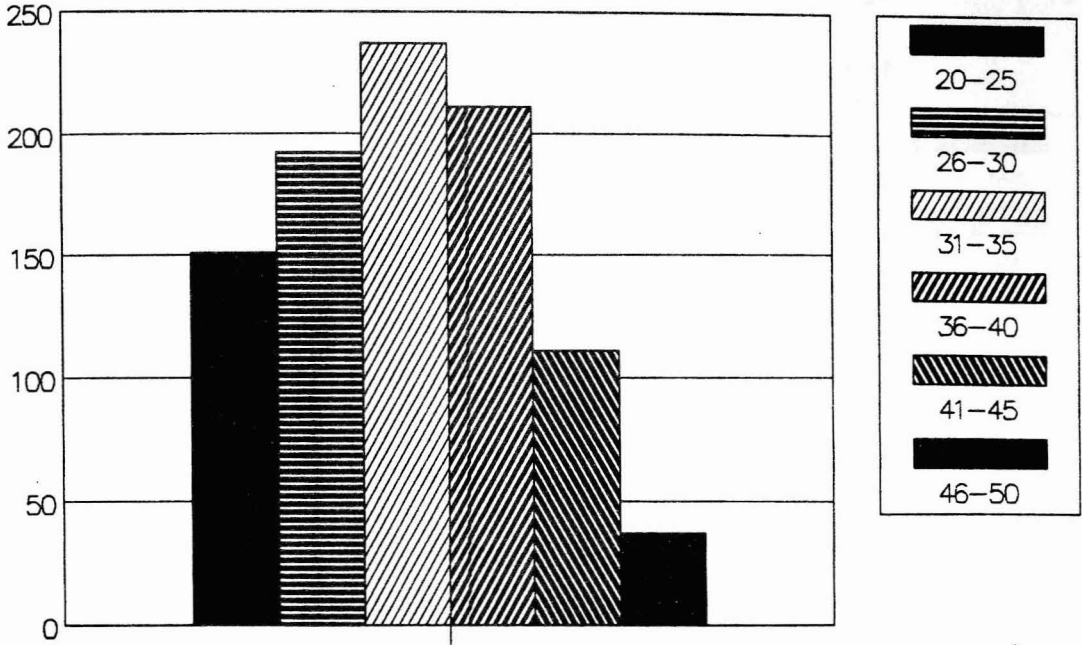
# WORK EXPERIENCE Average by State



State  
Figure 16  
200

# AVALANCHE WORKER AGES

Number of Workers



Ages

Figure 17

## # Ski Patrollers

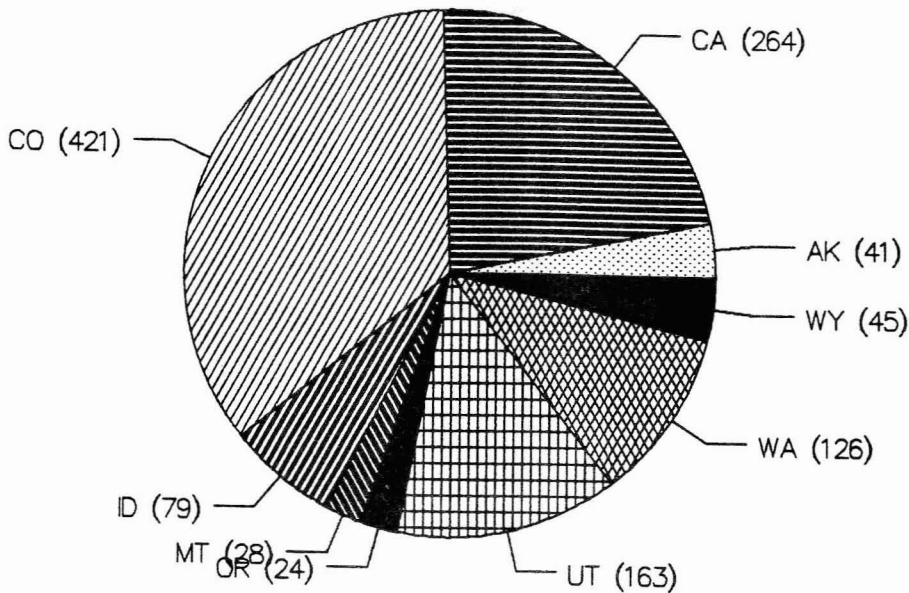
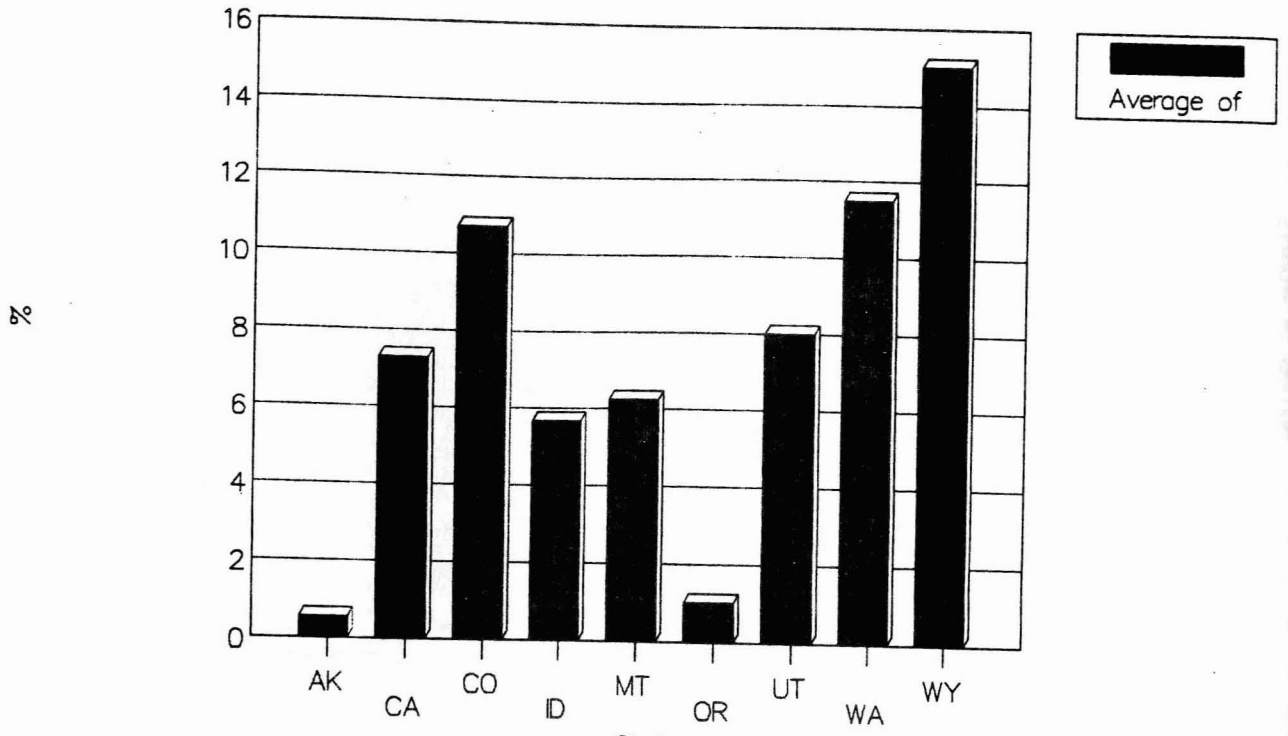


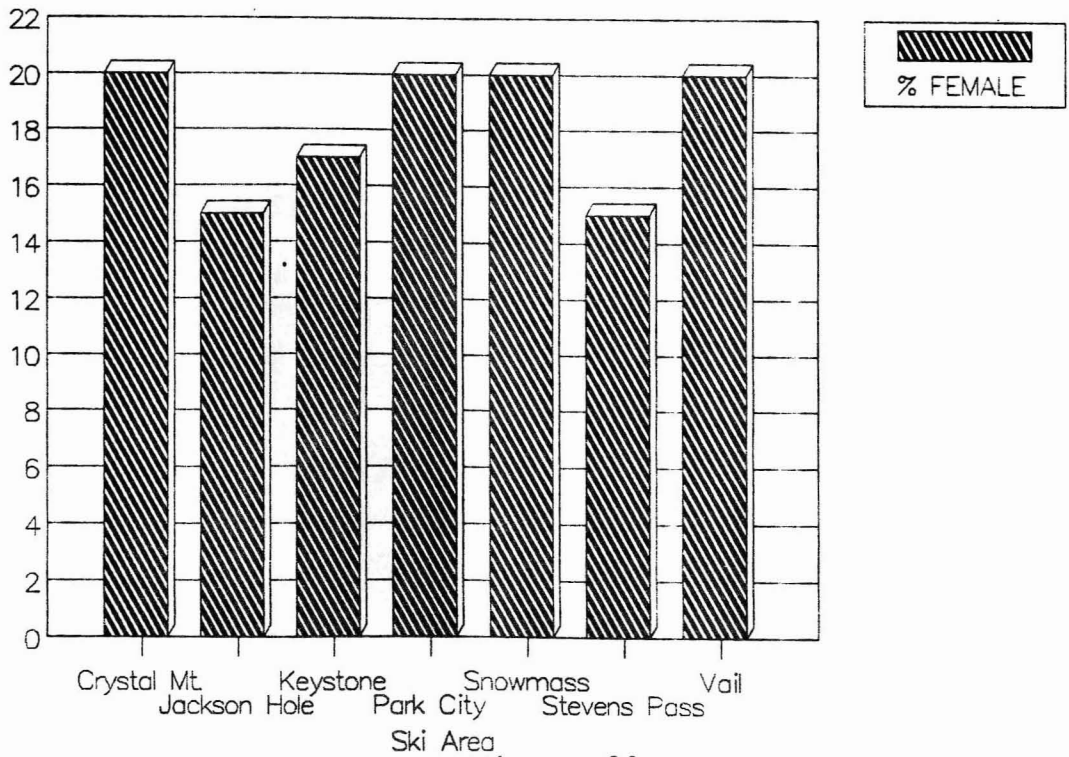
Figure 18

# % Female Workers



State  
Figure 19

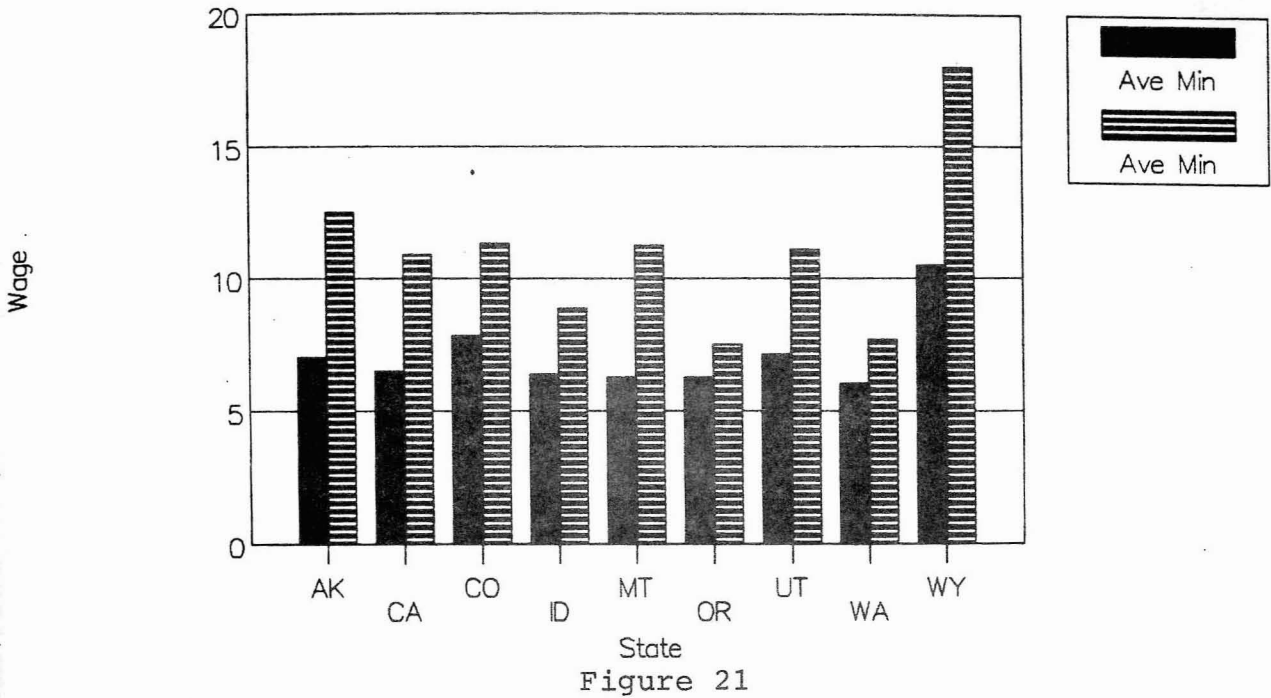
# SKI AREAS WITH MOST FEMALES



Ski Area  
Figure 20

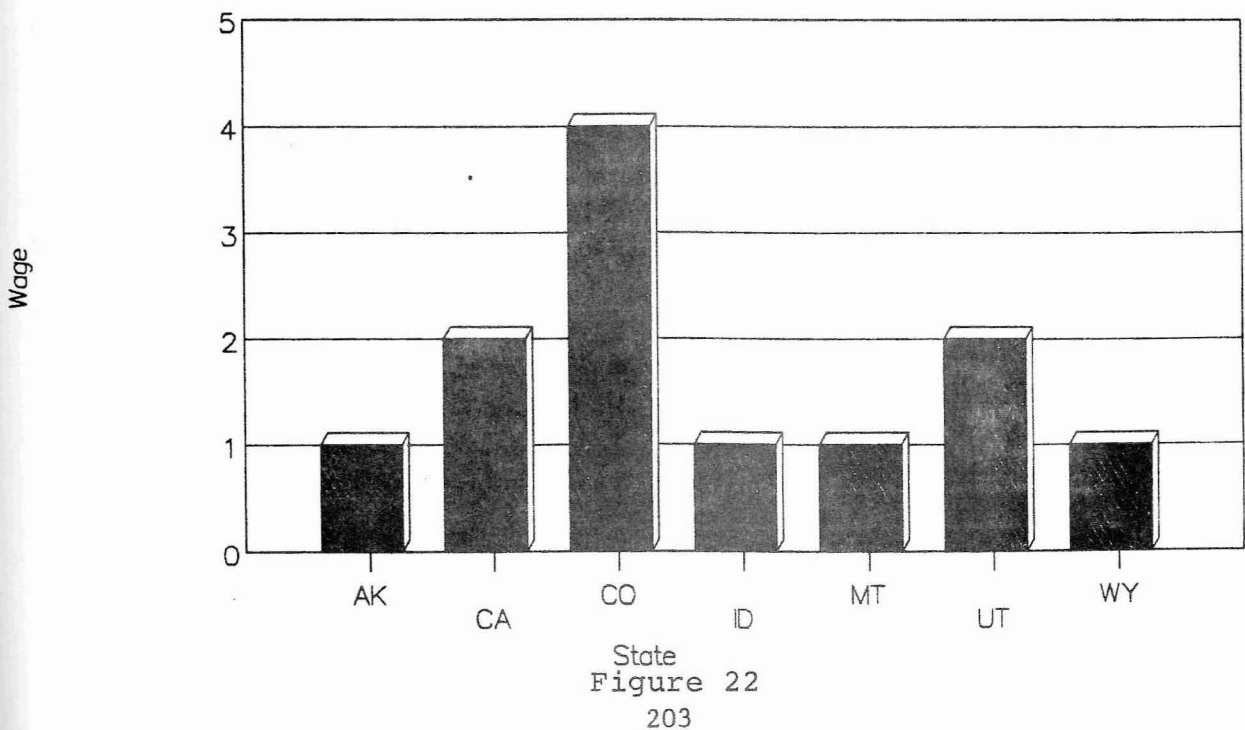
# WAGES

## AVERAGE MAX-MIN



## MAX WAGE > \$12.00

## Count of Ski Areas



# SKI AREA AVALANCHE RESCUE DOGS

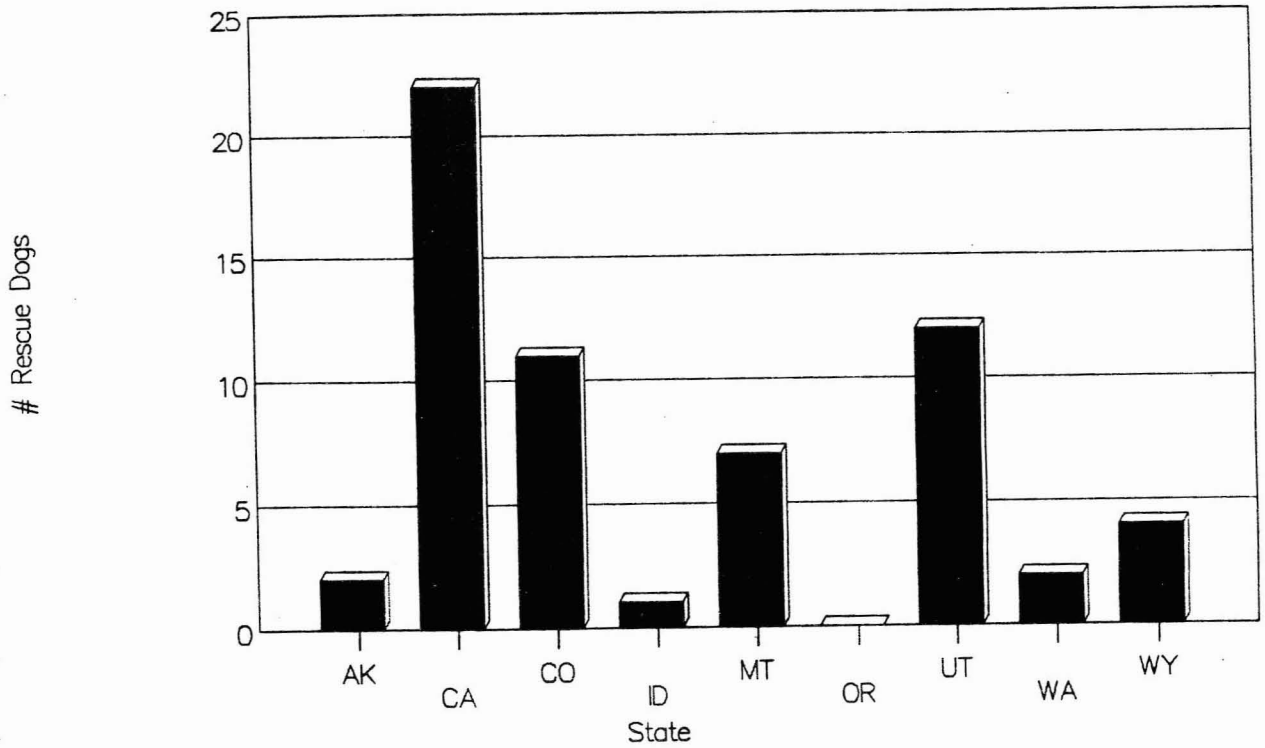
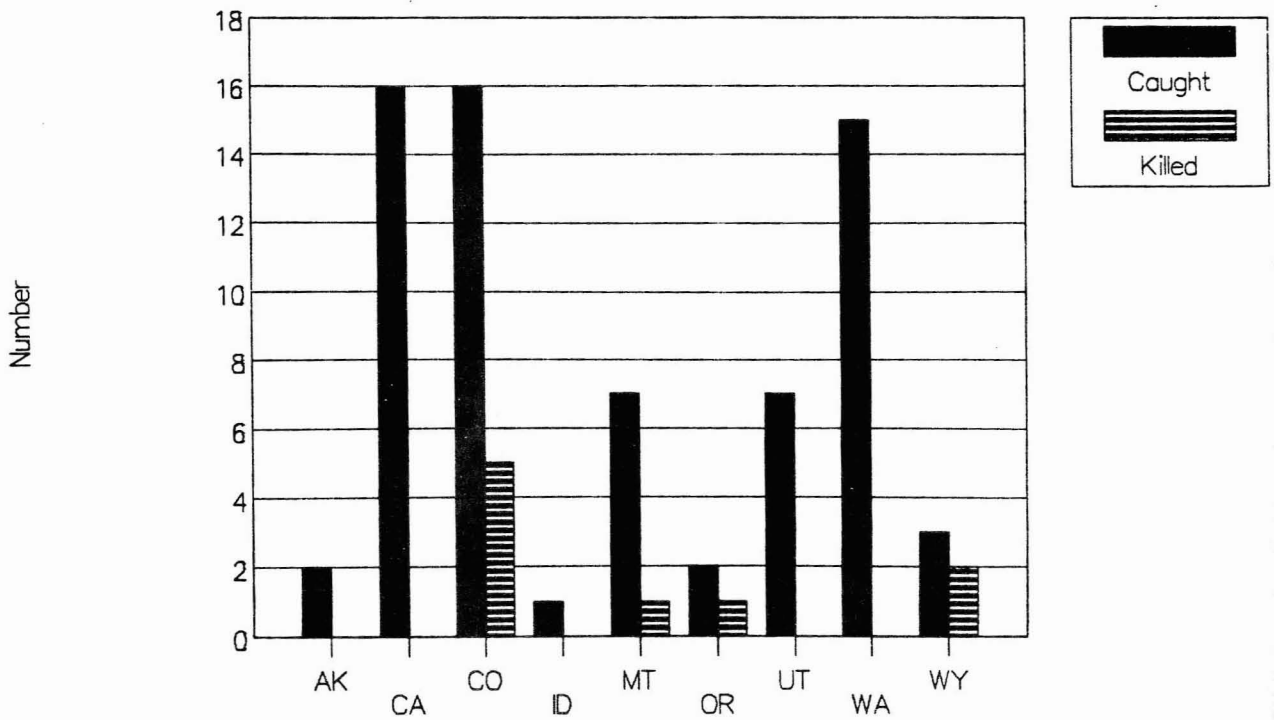


Figure 23

# Control Personnel Caught or Killed



State  
Figure 24