An Aging Workforce

Implications for Miners’ Safety and Training

By Bob Peters, Launa Mallett, Diana Schwerha and Charles Vaught
Presentation Outline

I. Age of the Current Workforce

II. Relationships Between Age and Injuries

III. Employment and Safety: What Lies Ahead

IV. Improving Miners’ On-The-Job Training
Bureau of Labor Statistics
Current Population Survey

- Monthly surveys of 60,000 US households
- Includes civilian noninstitutional population at least 16 years old
- Miners are categorized into 3 groups
  - Coal
  - Metal
  - Nonmetal and Quarry
Employees by Age Group

All Industry

Mining

Source: BLS 2004
Employees by Age Group

All Industry

Mining

Source: BLS 2004
Employees by Age Group

All Industry

- < 25: 39%
- 25-34: 39%
- > 44: 39%

Mining

- < 25: 51%
- 25-34: 25%
- > 44: 25%
- 35-44: 51%

Source: BLS 2004
Percent of Workforce in Youngest and Oldest Age Groups

Source: BLS 2004
Employees by Age Group

Coal

Metal

Source: BLS 2004
“We will need to replace a major portion, approximately 50%, of the underground coal mining workforce within the next 5-7 years.”

Source: Bruce Watzman’s statement before the US House of Representatives Subcommittee on Energy & Mineral Resources, July 8, 2004
Implication?

The mining industry needs to hire and train many young new workers.
I. Age of the Current Workforce

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Miners Lost Time Injury Rates BY Age

LT injuries per 200,000 hours

Age Groups

< 25  |  4.89
25-34 |  3.13
35-44 |  2.89
45-54 |  2.77
> 54  |  2.96

Source: BLS & MSHA 2003
Coal Miners Lost Time Injury Rates
BY Age

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>LT Injuries per 200,000 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>5.67</td>
</tr>
<tr>
<td>25-34</td>
<td>4.08</td>
</tr>
<tr>
<td>35-44</td>
<td>3.91</td>
</tr>
<tr>
<td>45-54</td>
<td>3.45</td>
</tr>
<tr>
<td>&gt; 54</td>
<td>5.55</td>
</tr>
</tbody>
</table>

Source: BLS & MSHA 2003

CDC

NIOSH
Metal Miners Lost Time Injury
Rates BY Age

Source: BLS & MSHA 2003
Safety Performance Measures

- **Injury Frequency**
  - Rate of lost time injuries per 200,000 hours

- **Injury Severity**
  - Number of lost work days following an injury

Does age affect how long it takes to recover from injuries?
Days Lost Per Injury BY Age

Source: MSHA 2003
Days Lost Per Injury - Coal

Source: MSHA 2003
Days Lost Per Injury - Metal

Source: MSHA 2003
Days Lost Per Injury - Nonmetal

Source: MSHA 2003
Days Lost Per Injury - Stone

Source: MSHA 2003
Days Lost Per Injury
Sand and Gravel

Median Number of Days

Source: MSHA 2003
Total Days Lost BY Age Group

Total lost work days = 305,601

Source: MSHA 2003
Lost time vs Non-lost time injuries BY Age Group

Source: MSHA 2003
Conclusion

Compared to older miners, young miners

- have higher injury rates,
- miss fewer days of work to recover from their injuries
Age related trends in type of injury

- Accident Type
  - Slips & Falls
  - Hand Tools
- Part of Body
  - Back
  - Finger
  - Knee
  - Shoulder
As miners get older, do slips & falls account for a ... Greater or Lesser proportion of their total injuries?
Accident Type: Slips and Falls

N = 2,233

Source: MSHA 2003
As miners get older, do hand tools account for a …

Greater or Lesser

proportion of their total injuries?
Accident Type: Hand Tools

N = 1,343

Source: MSHA 2003
Of all injuries that occur while miners are using hand tools...

- 18% are caused by knives
- 48% are cuts
What are the most commonly injured body parts?

1.

2.

3.

4.
Parts of Body Injured Most Frequently

- All other 53%
- Finger 16%
- Knee 8%
- Shoulder 6%
- Back 17%

N = 10,717 injuries
Source: MSHA 2003
Part of Body: Back

<table>
<thead>
<tr>
<th>Age Group</th>
<th>% Injuries within age grp</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25</td>
<td>16.0%</td>
</tr>
<tr>
<td>25-34</td>
<td>17.0%</td>
</tr>
<tr>
<td>35-44</td>
<td>17.3%</td>
</tr>
<tr>
<td>45-54</td>
<td>17.5%</td>
</tr>
<tr>
<td>&gt;54</td>
<td>14.2%</td>
</tr>
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</table>

N = 1,805

Source: MSHA 2003
As miners get older, do finger injuries account for a …

**Greater** or **Lesser**

proportion of their total injuries?
Part of Body: Finger

% injuries within age grp

<table>
<thead>
<tr>
<th>Age Group</th>
<th>&lt;25</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>&gt; 54</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19.4%</td>
<td>15.9%</td>
<td>15.4%</td>
<td>14.7%</td>
<td>16.1%</td>
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N = 1,683

Source: MSHA 2003
As miners get older, do knee injuries account for a …

Greater or Lesser proportion of their total injuries?
Part of Body: Knee

<table>
<thead>
<tr>
<th>Age Group</th>
<th>% Injuries within age grp</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25</td>
<td>6.3%</td>
</tr>
<tr>
<td>25-34</td>
<td>7.4%</td>
</tr>
<tr>
<td>35-44</td>
<td>7.1%</td>
</tr>
<tr>
<td>45-54</td>
<td>9.4%</td>
</tr>
<tr>
<td>&gt; 54</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

N = 862

Source: MSHA 2003
As miners get older, do shoulder injuries account for a ... **Greater** or **Lesser** proportion of their total injuries?
Part of Body: Shoulder

\[\begin{array}{cccccc}
\text{Age Groups} & <25 & 25-34 & 35-44 & 45-54 & >54 \\
\% Injuries within age grp & 4.0\% & 4.8\% & 5.2\% & 6.6\% & 8.1\% \\
\end{array}\]

Source: MSHA 2003
SUMMARY

- As miners get older the following types of injuries become *more* prevalent
  - Slips & Falls
  - Knee & Shoulder

- As miners get older the following types of injuries become *less* prevalent
  - Hand tools
  - Finger
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The US Energy Information Administration projects a 32% increase in the demand for US coal by 2025.

2004 production: 1.125 billion tons

2025 projected tons: **1.488 billion**

Source: Energy Information Admin (2005)
www.eia.doe.gov/oiaf/aeo/coal.html
Estimated Coal Production (2004-2025)

Source: Energy Information Admin (2005)
www.eia.doe.gov/oiaf/aeo/coal.html
The US Energy Information Administration projects a 12.8% increase in the number of jobs for coal miners by 2025.

2004 employment: 72,749 jobs

2025 projection: 82,103 jobs
Estimated Coal Mine Employment (2004-2025)

Source: Energy Information Admin (2005)
www.eia.doe.gov/oiaf/aeo/coal.html
Why is New Miner H&S Training Important?

- Many people are about to leave/join the workforce
- Highest fatality rate among all U.S. industries (20 per 100,000 workers)
- Relatively high rate of lost time injuries (3.2 per 100 workers)
- More than 1,000 die of lung disease each year

Source: Morbidity & Mortality Weekly Report & MSHA
What Does History Tell Us?

- NAS studied safety at 15 large underground coal companies during late 1970s
- Analyzed age and injury data during 1978-80
- Miners age 18-24 had injury rates nearly twice that of miners 25-34, and nearly three times as high as miners over 44.

Will History Be Repeated?
Presentation Outline

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Coaching Skills Workshop for On-The-Job Trainers

Topics Include:

• How Adults Learn
• Preparing Training Materials
• Assessing a Trainee
• Steps to Successful Coaching

They Know the Job Skills. Now Teach Them the Training Skills.
Target Audience:

Mining company personnel who are interested in teaching people with good mining skills to be effective on-the-job trainers.
Next Seminars

- June 21, 22 or 23
- National Mine Academy (Beckley, WV)
- To Register:

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Thank You!

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