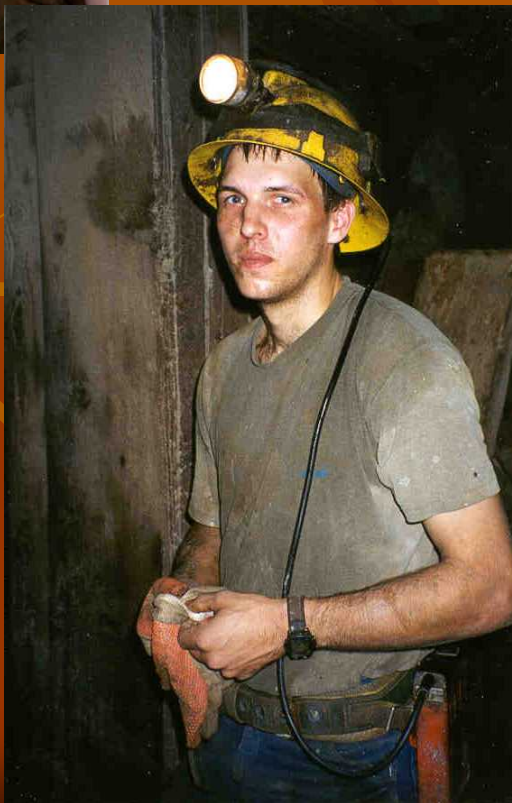
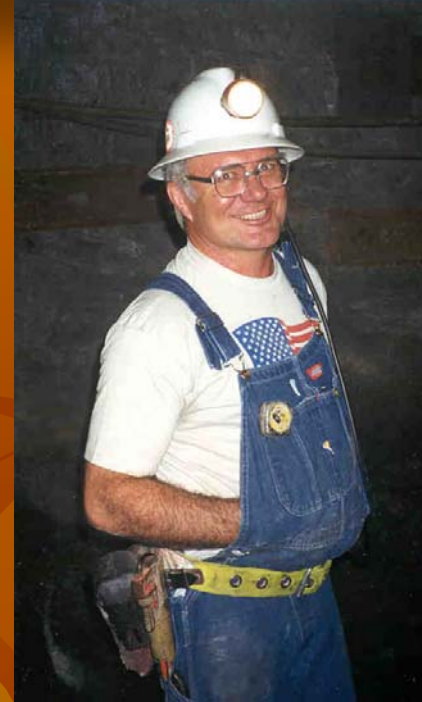




An Aging Workforce



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

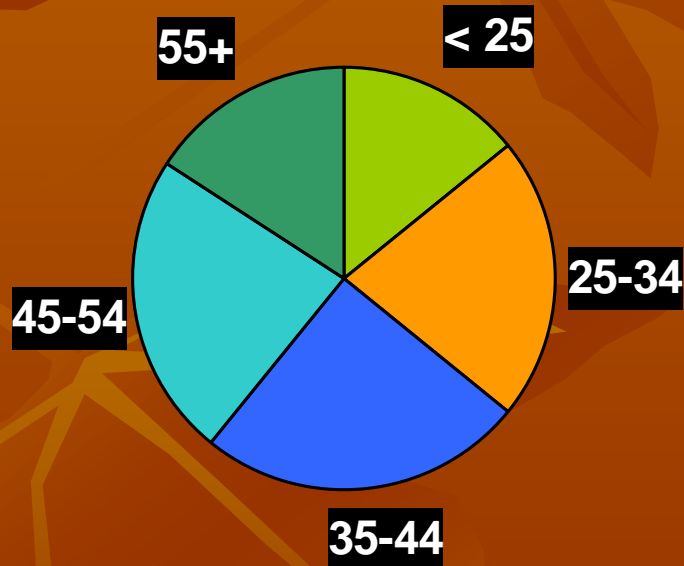
Bureau of Labor Statistics

Current Population Survey

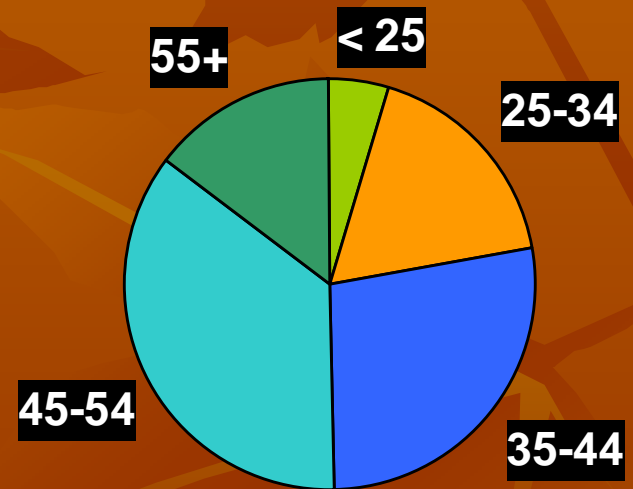
- Monthly surveys of 60,000 US households
- Includes civilian noninstitutional population at least 16 years old
- Miners are categorized into 3 groups
 - Coal
 - Metal
 - Nonmetal and Quarry

Employees by Age Group

All Industry

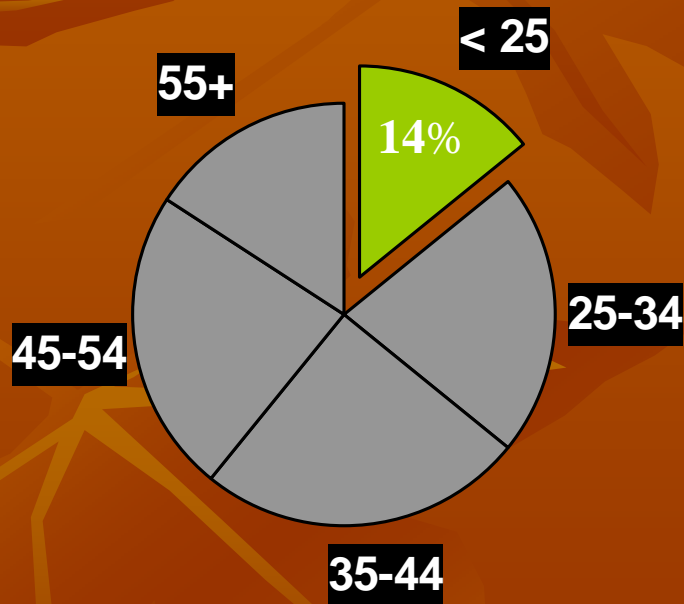


Mining

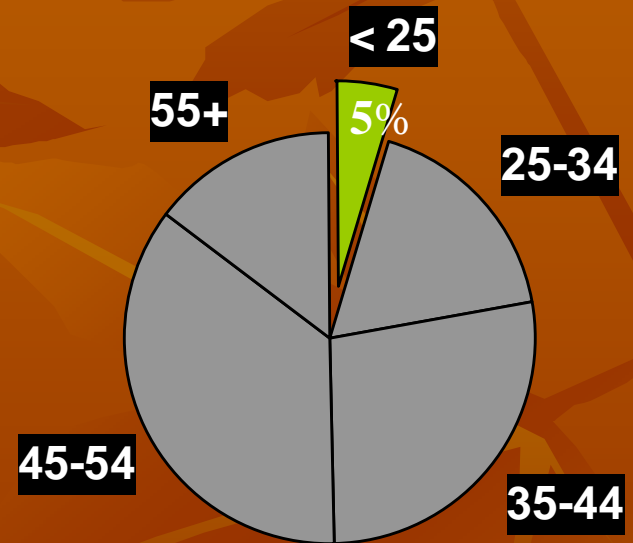


Employees by Age Group

All Industry

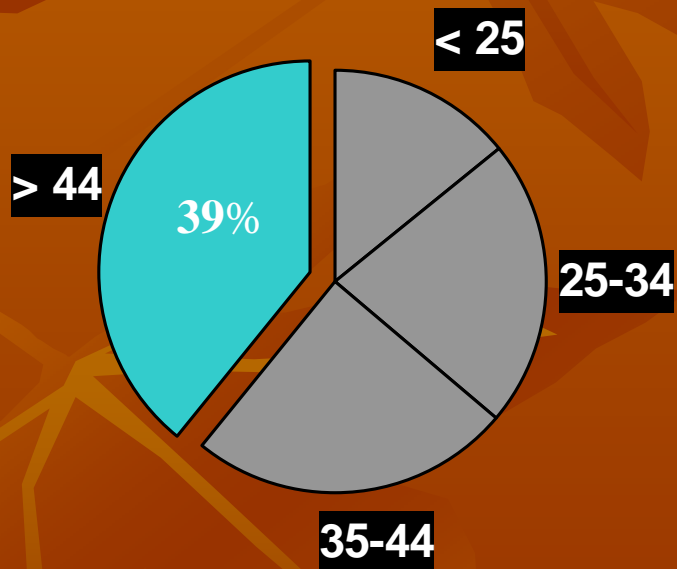


Mining

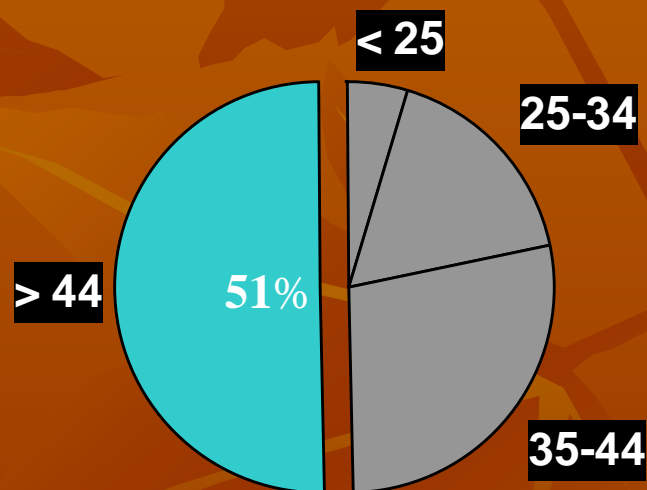


Employees by Age Group

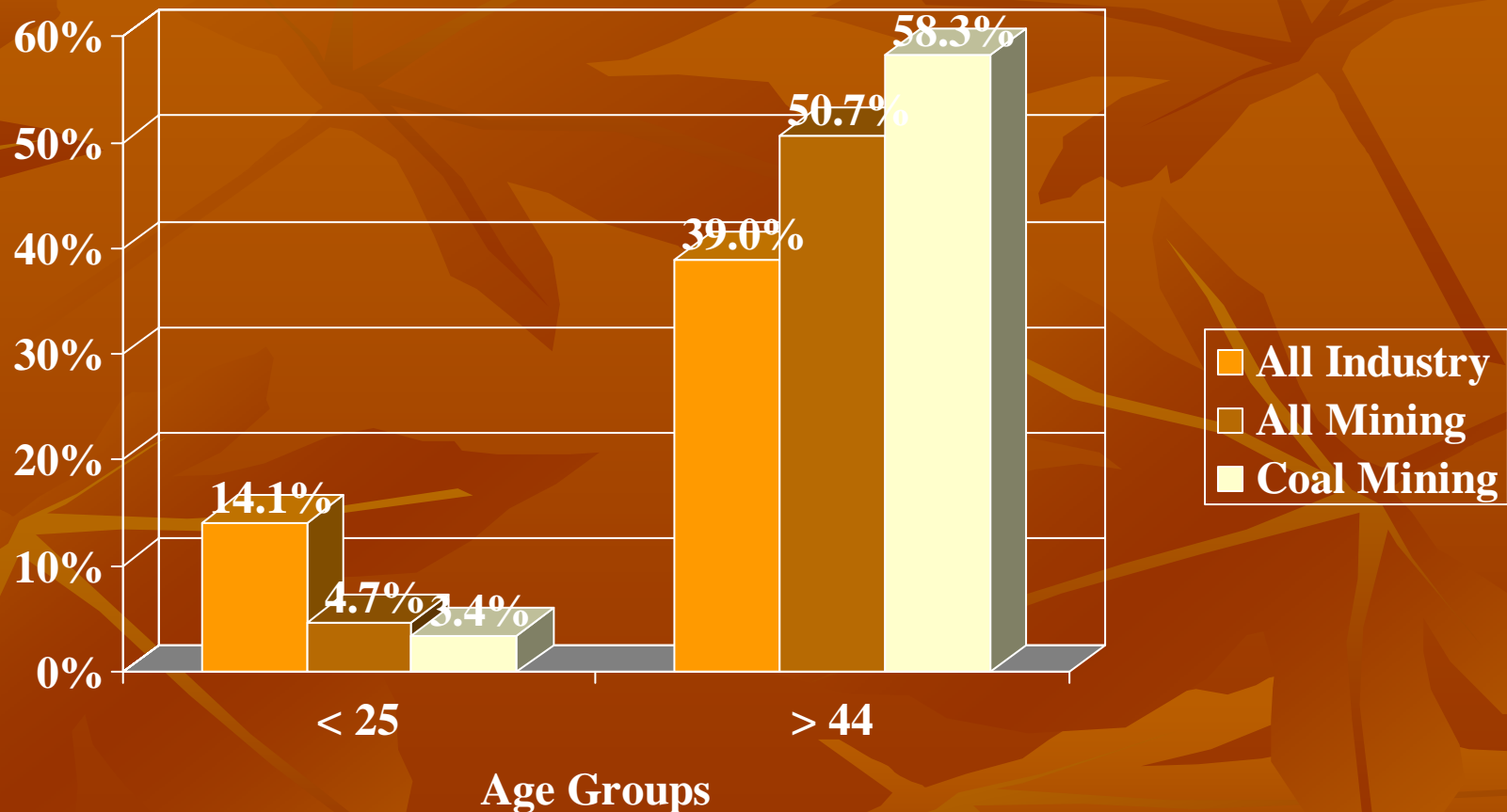
All Industry



Mining



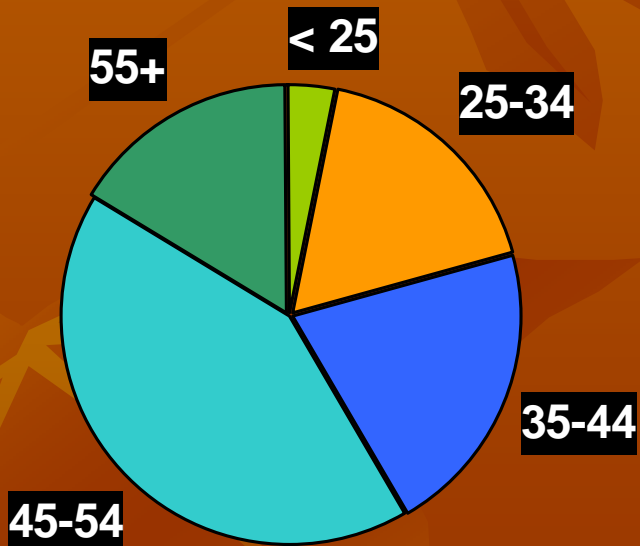
Percent of Workforce in Youngest and Oldest Age Groups



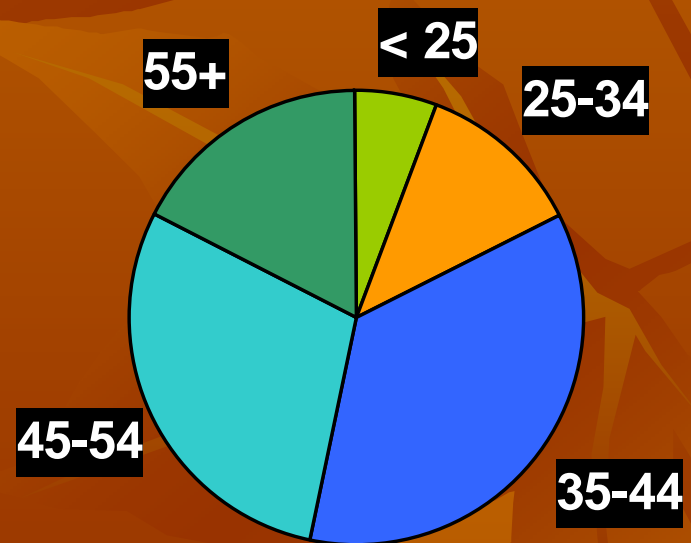
Source: BLS 2004

Employees by Age Group

Coal



Metal



“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?

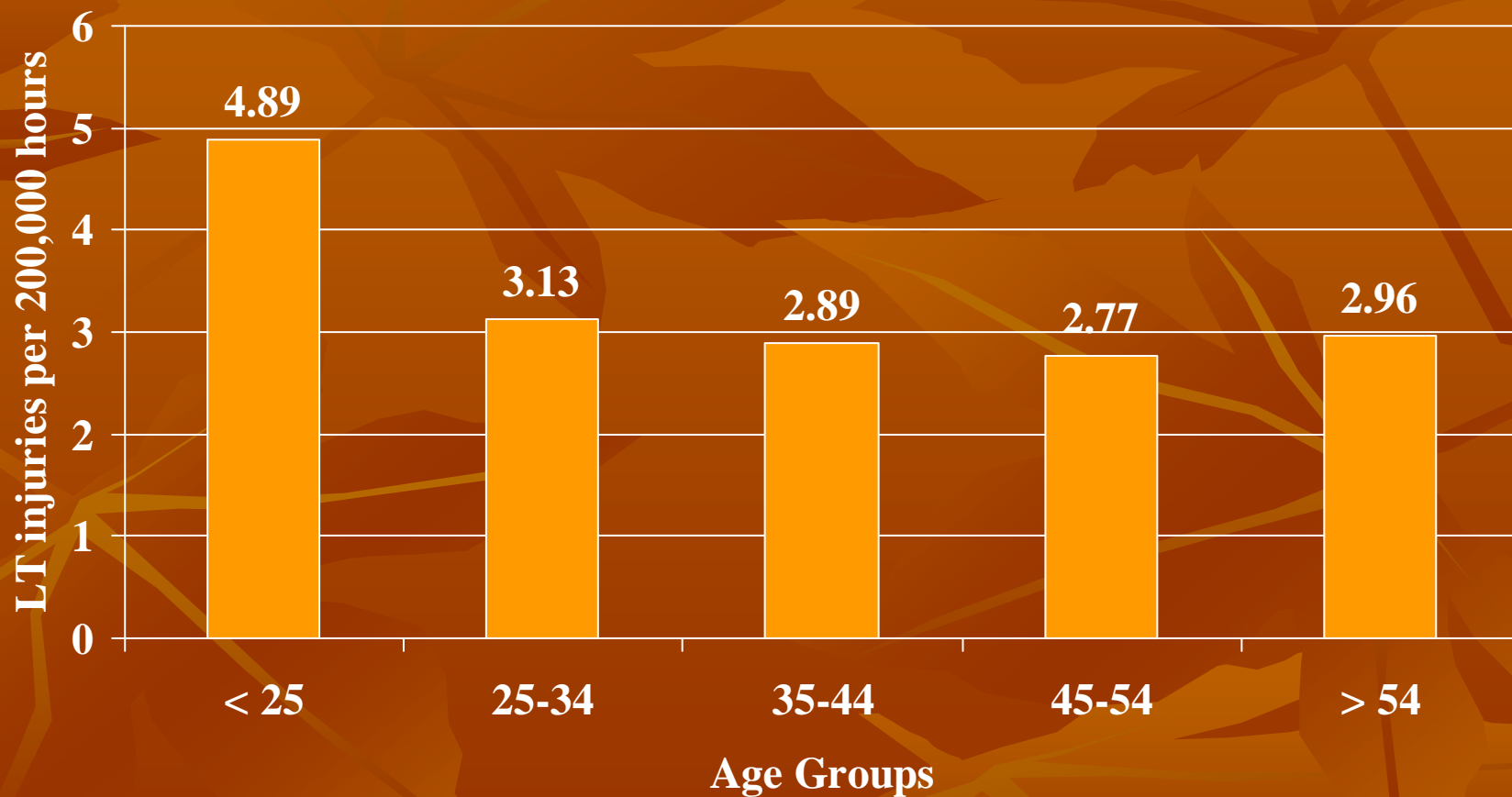
The mining industry needs to hire and train many young new workers.



Presentation Outline

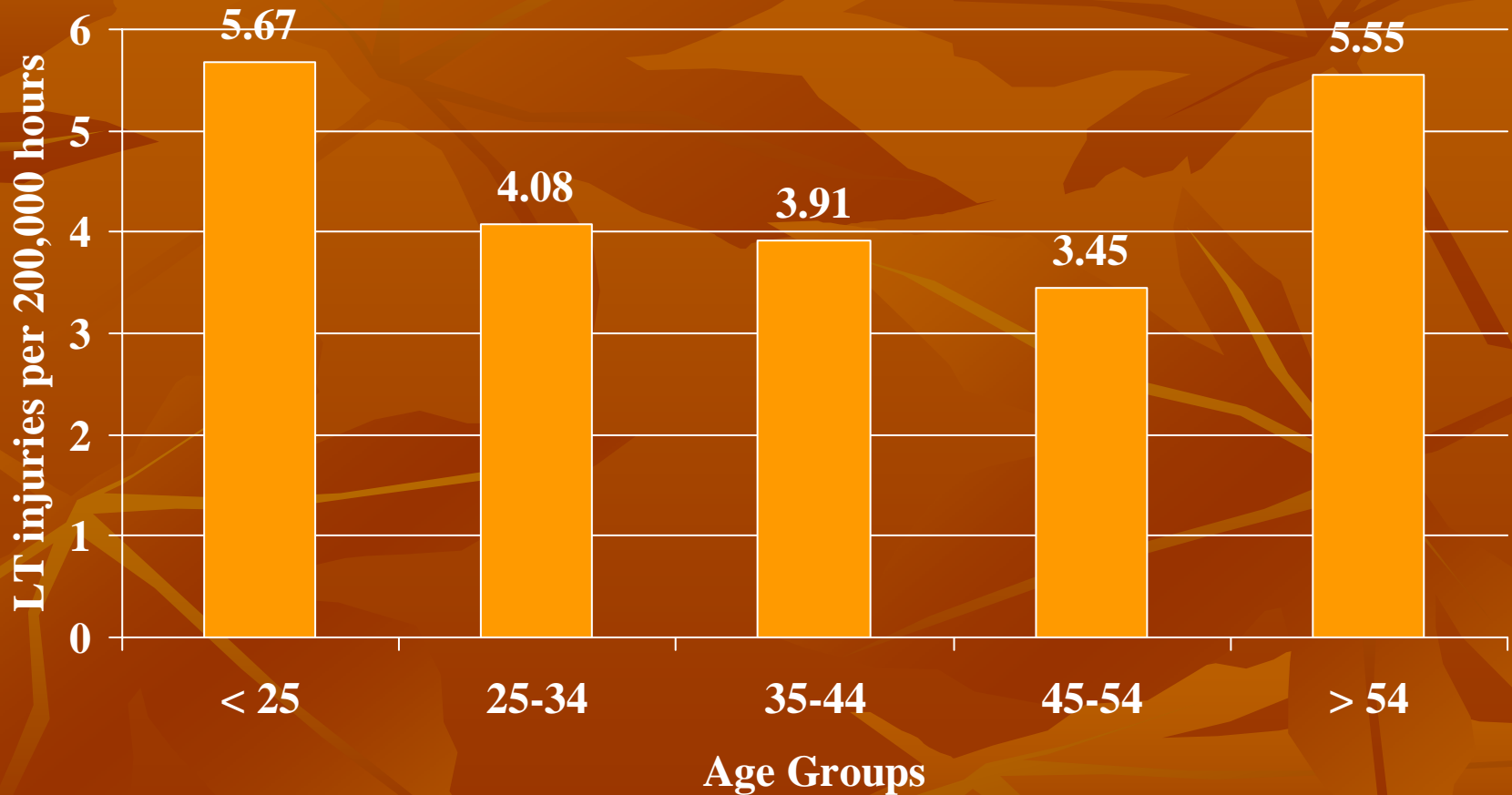
- I. Age of the Current Workforce
- II. Relationships Between Age and Injuries**
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Miners Lost Time Injury Rates BY Age



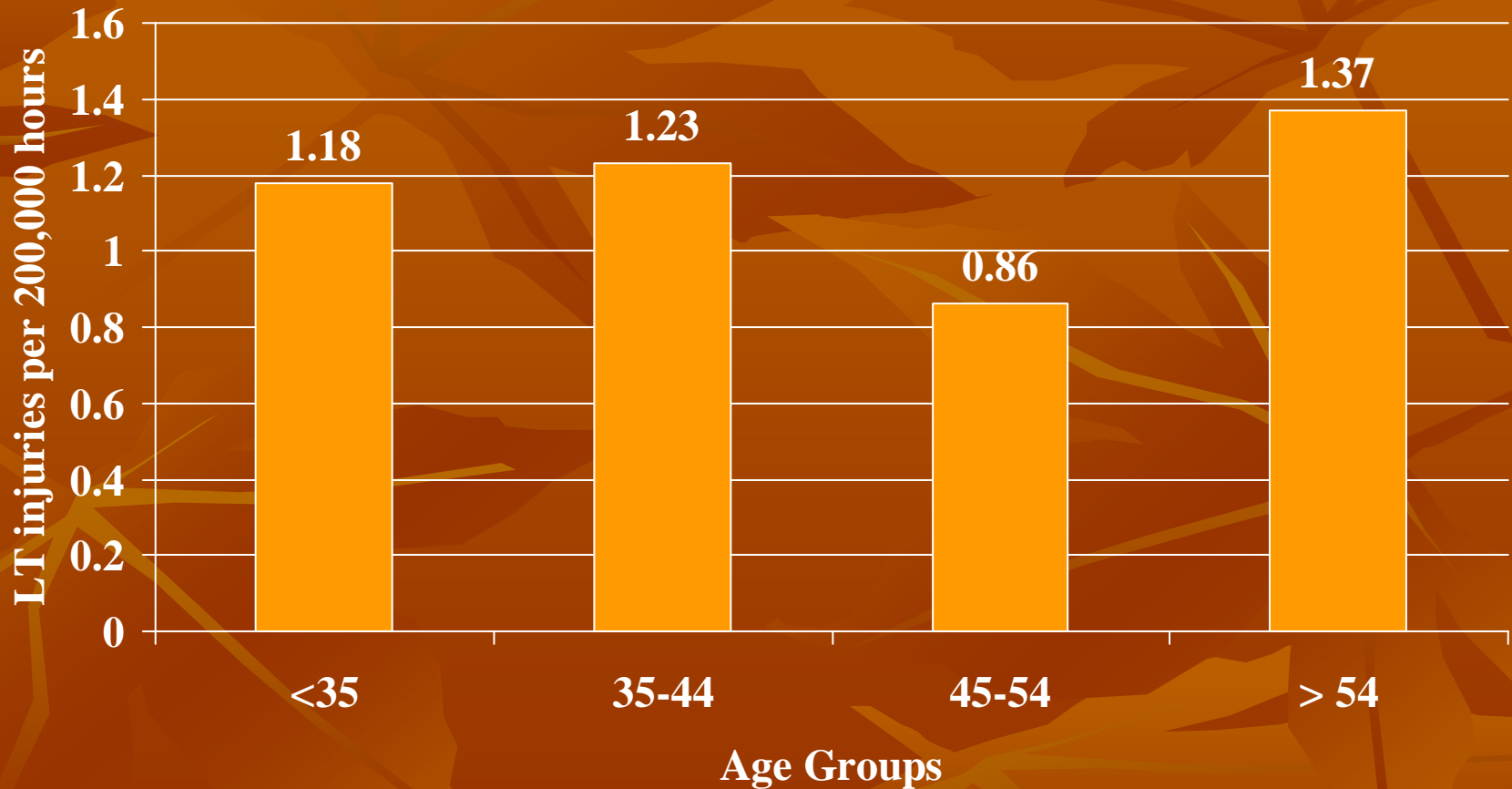
Source: BLS & MSHA 2003

Coal Miners Lost Time Injury Rates BY Age



Source: BLS & MSHA 2003

Metal Miners Lost Time Injury Rates BY Age



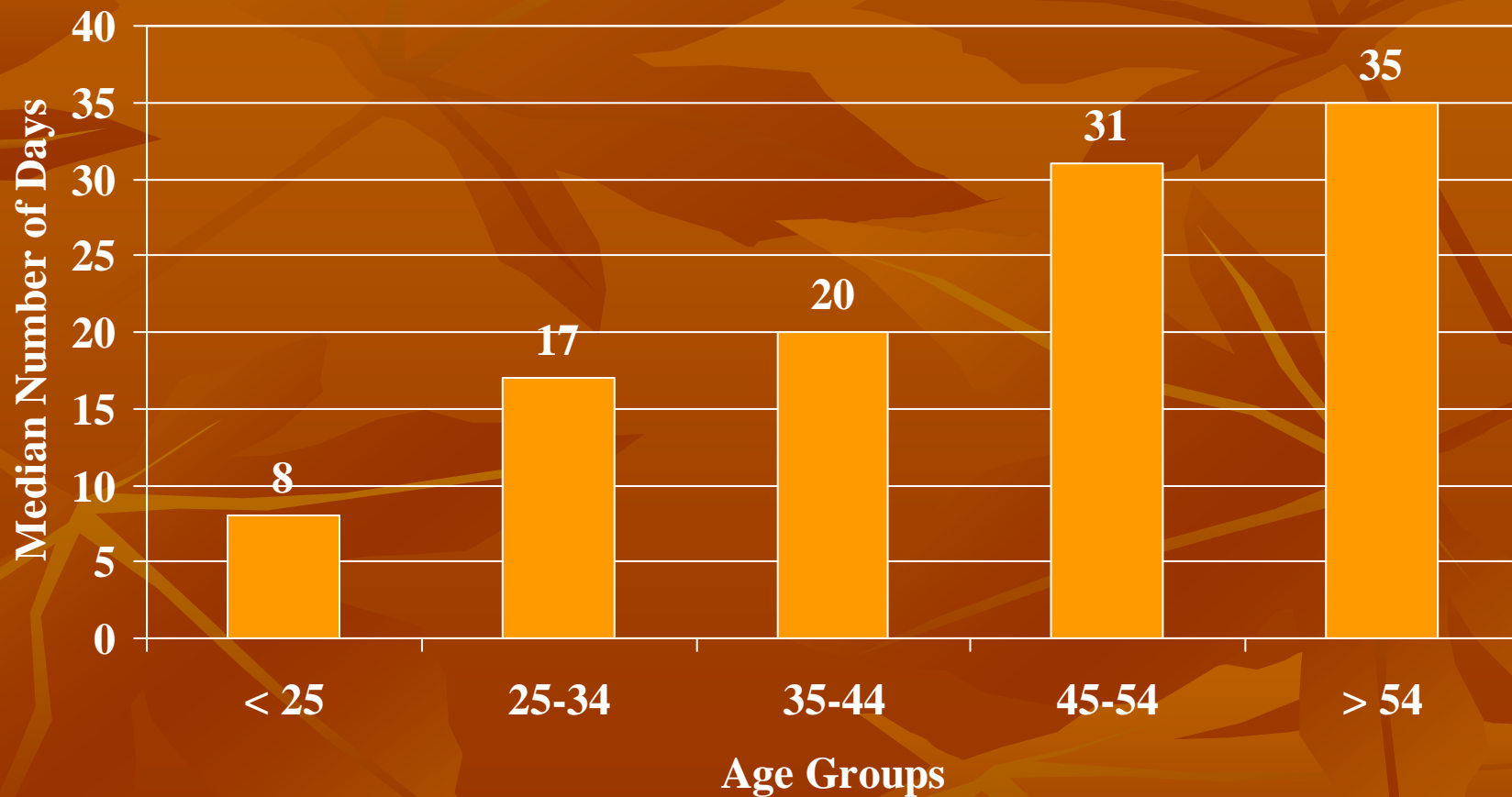
Source: BLS & MSHA 2003

Safety Performance Measures

- Injury Frequency
 - Rate of lost time injuries per 200,000 hours
- Injury Severity
 - Number of lost work days following an injury

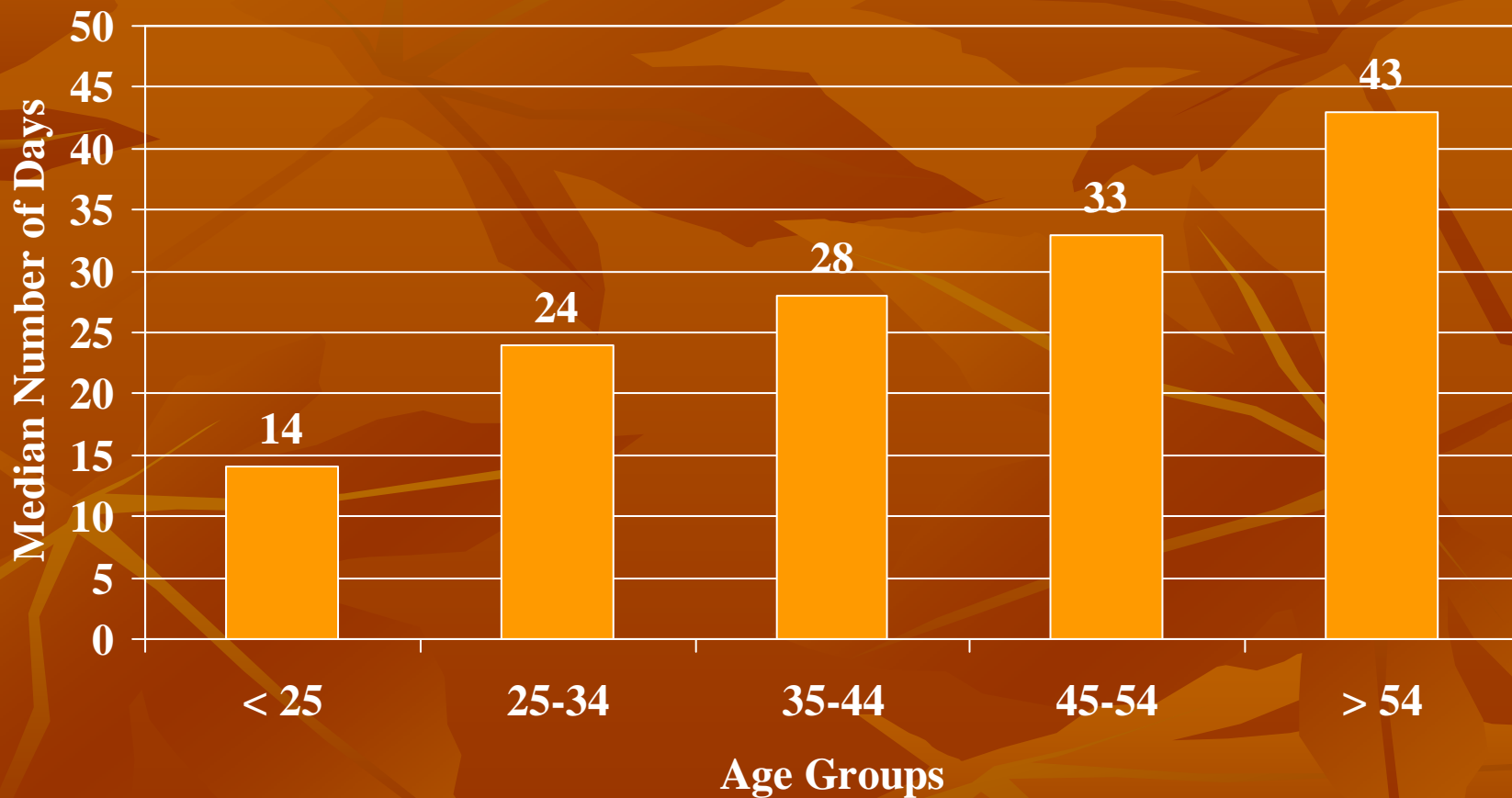
Does age affect how long it takes to recover from injuries?

Days Lost Per Injury BY Age



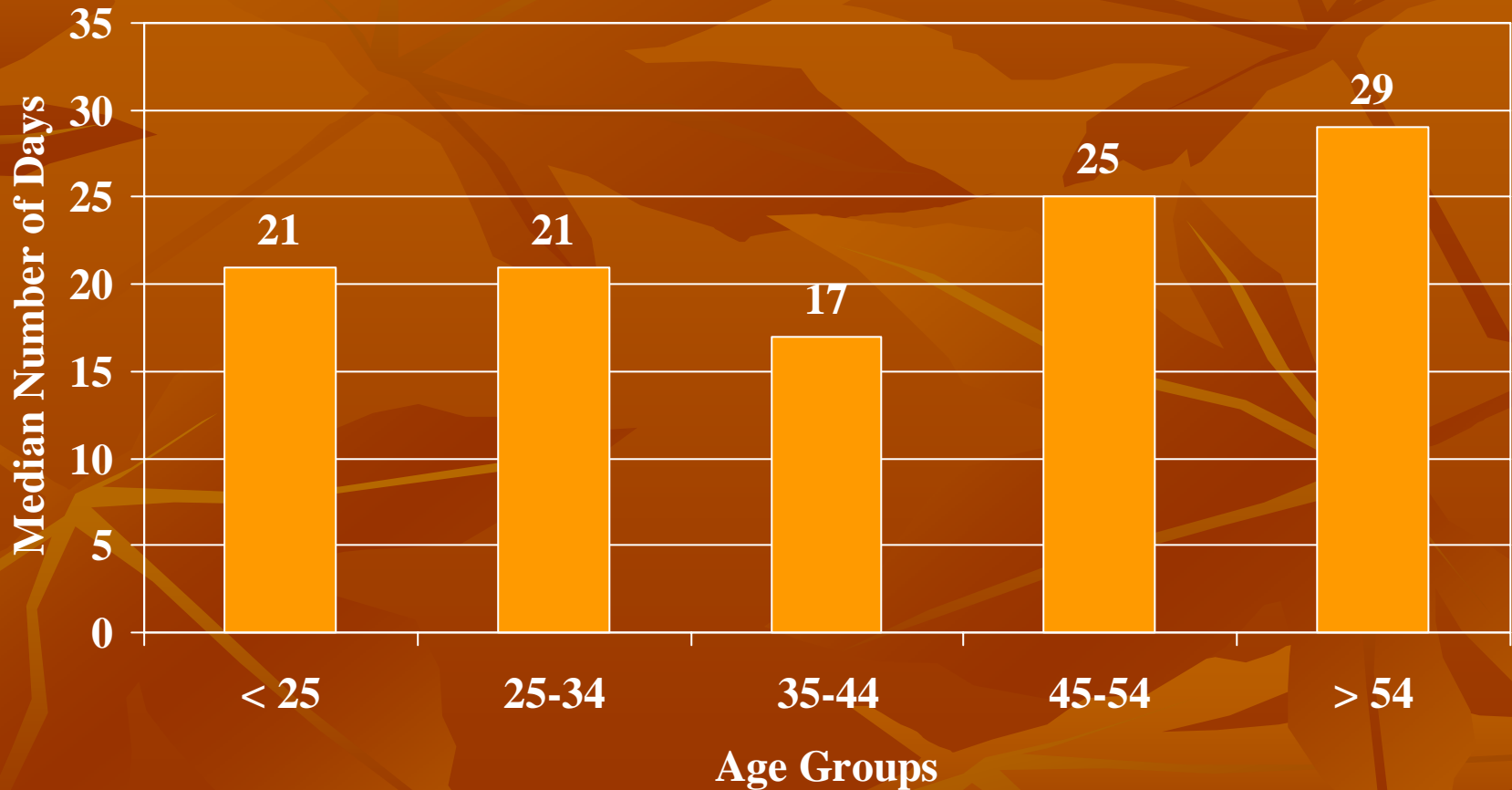
Source: MSHA 2003

Days Lost Per Injury - Coal



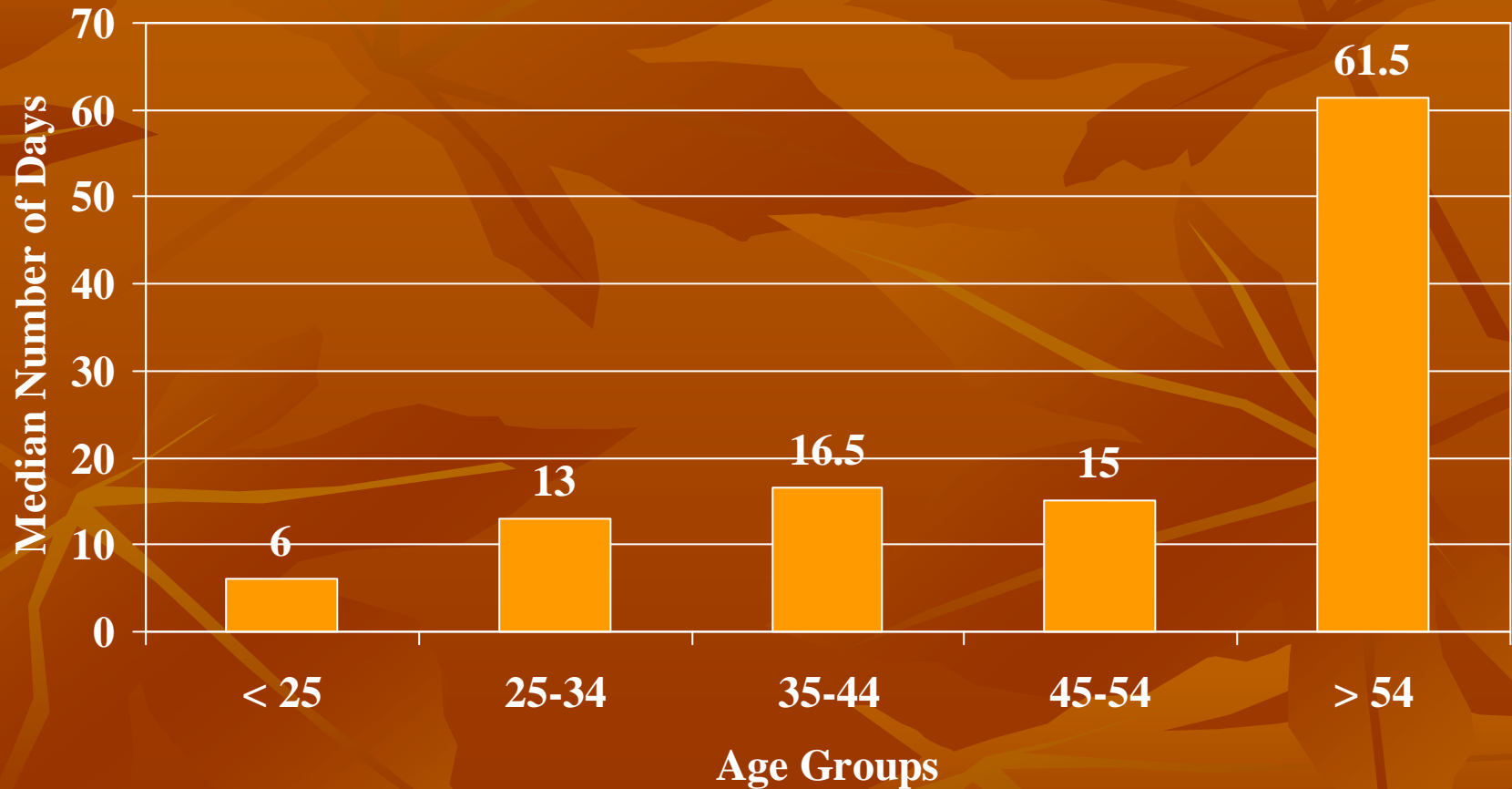
Source: MSHA 2003

Days Lost Per Injury - Metal



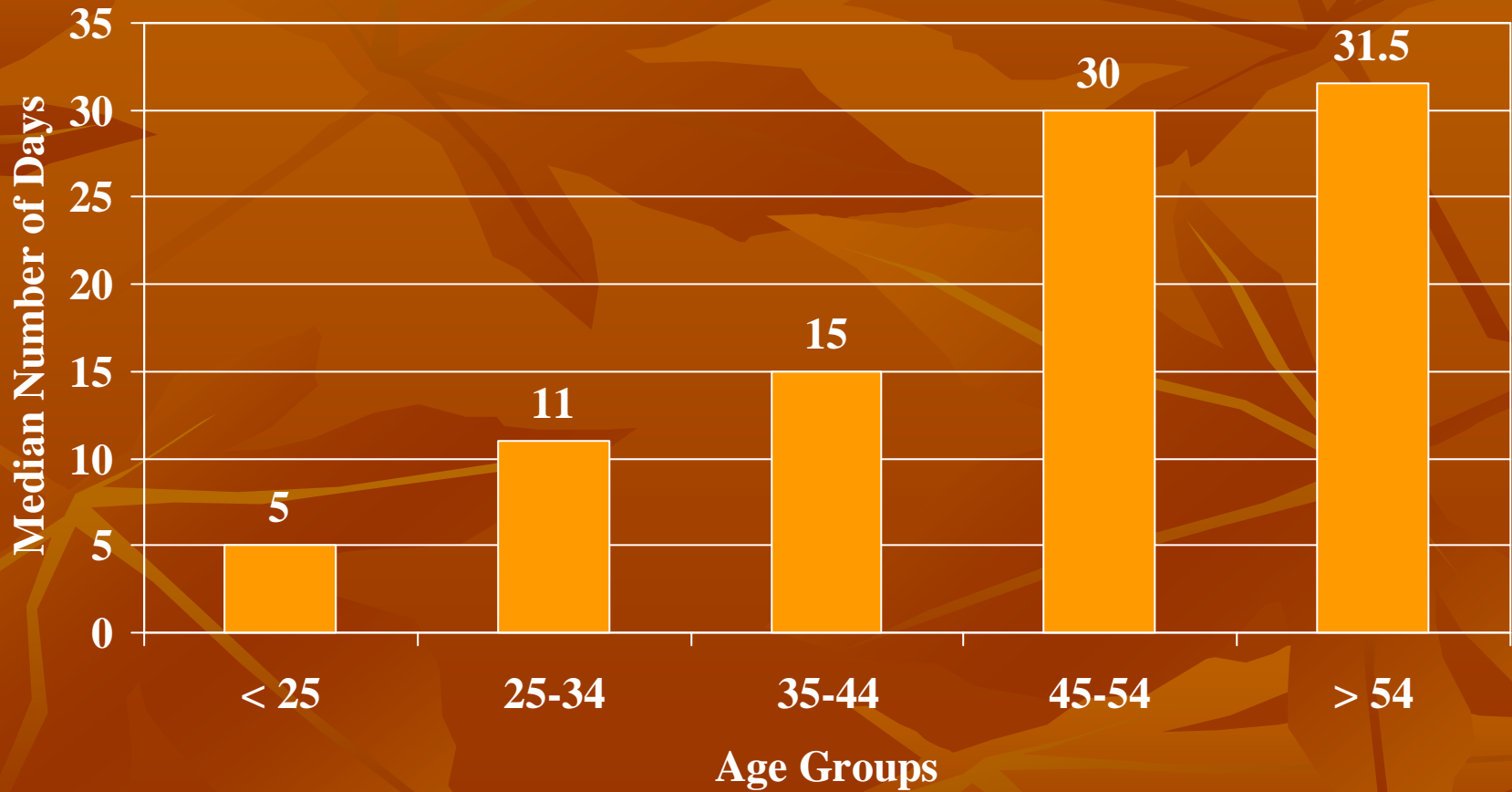
Source: MSHA 2003

Days Lost Per Injury - Nonmetal



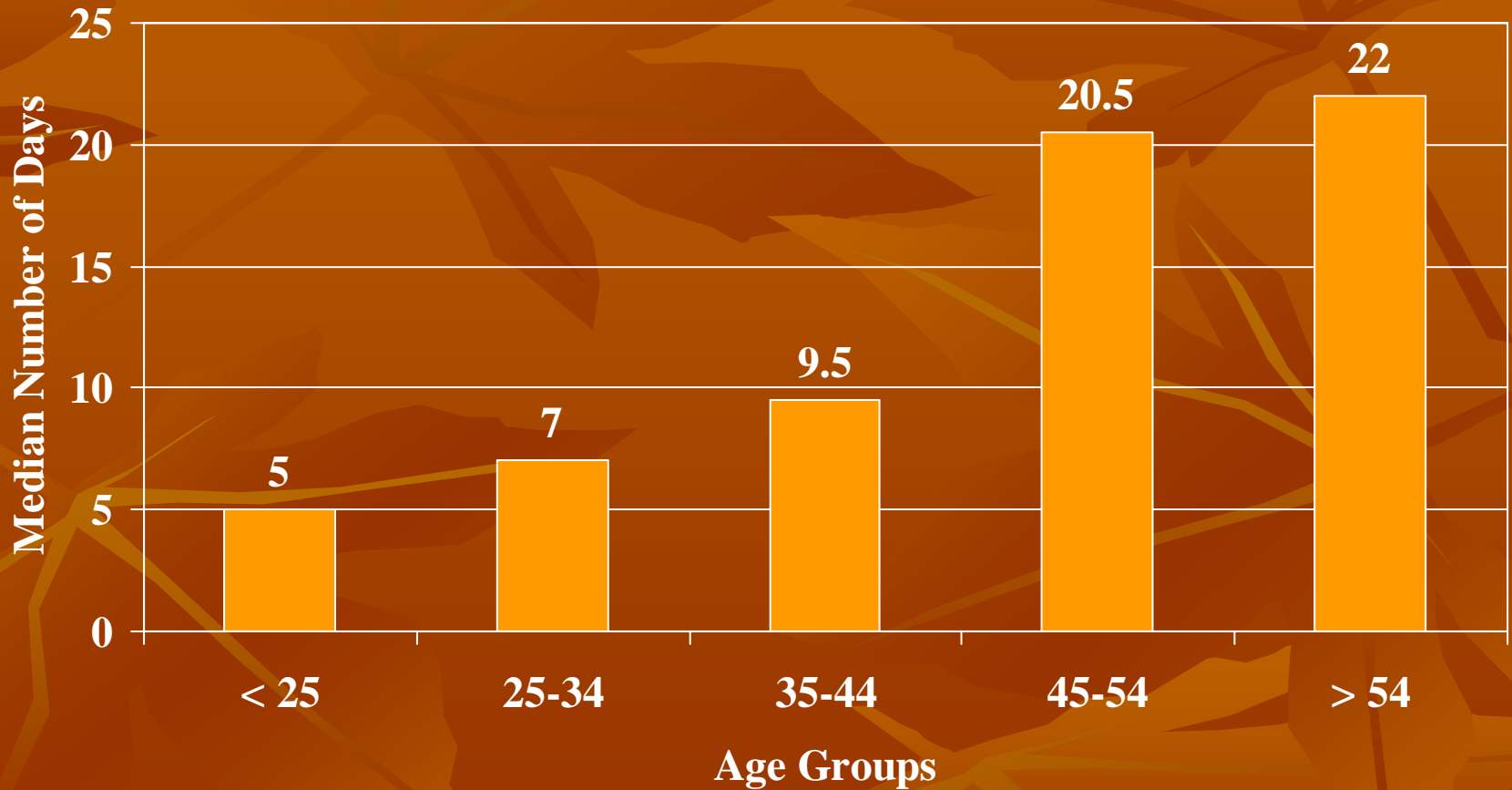
Source: MSHA 2003

Days Lost Per Injury - Stone



Source: MSHA 2003

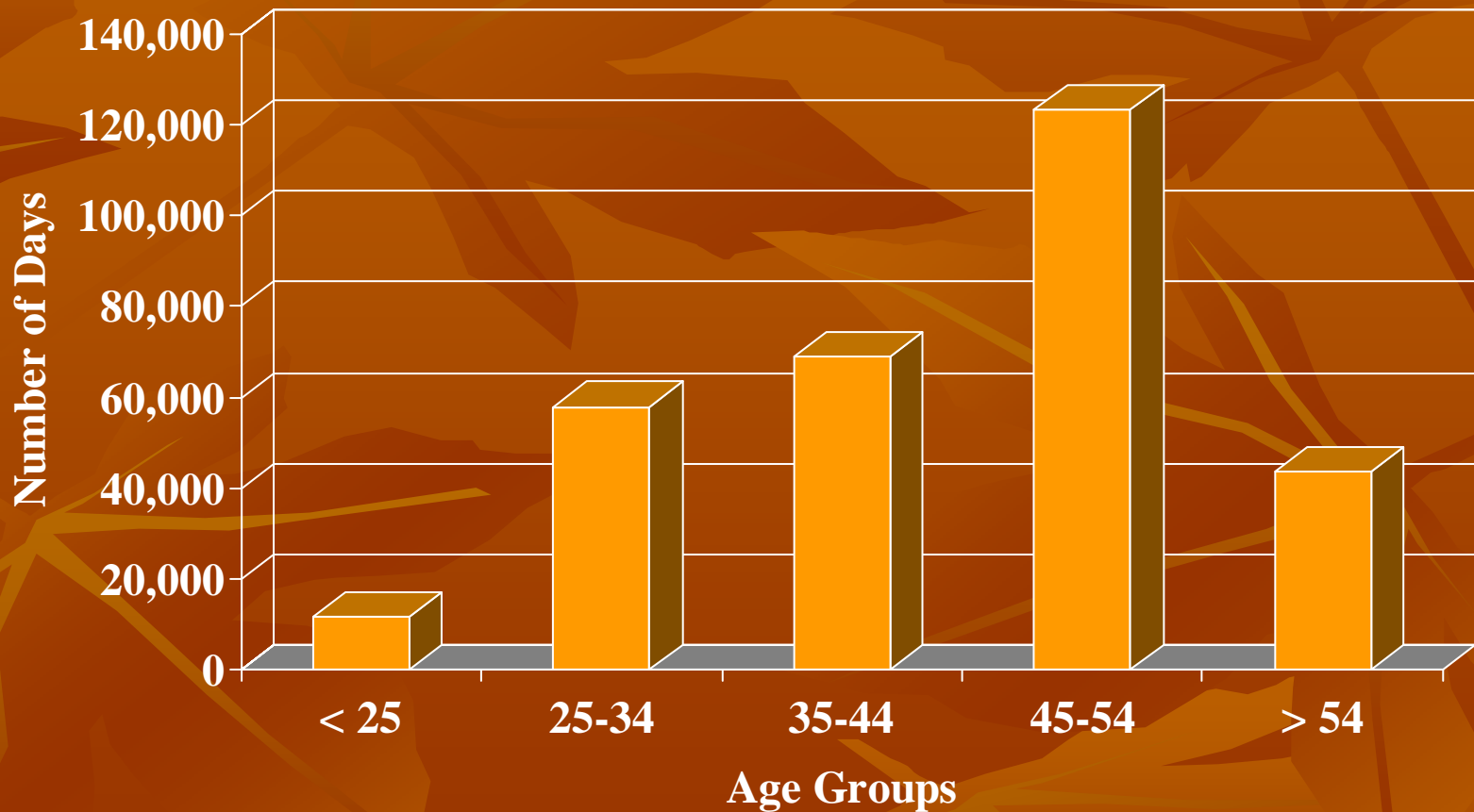
Days Lost Per Injury Sand and Gravel



Source: MSHA 2003

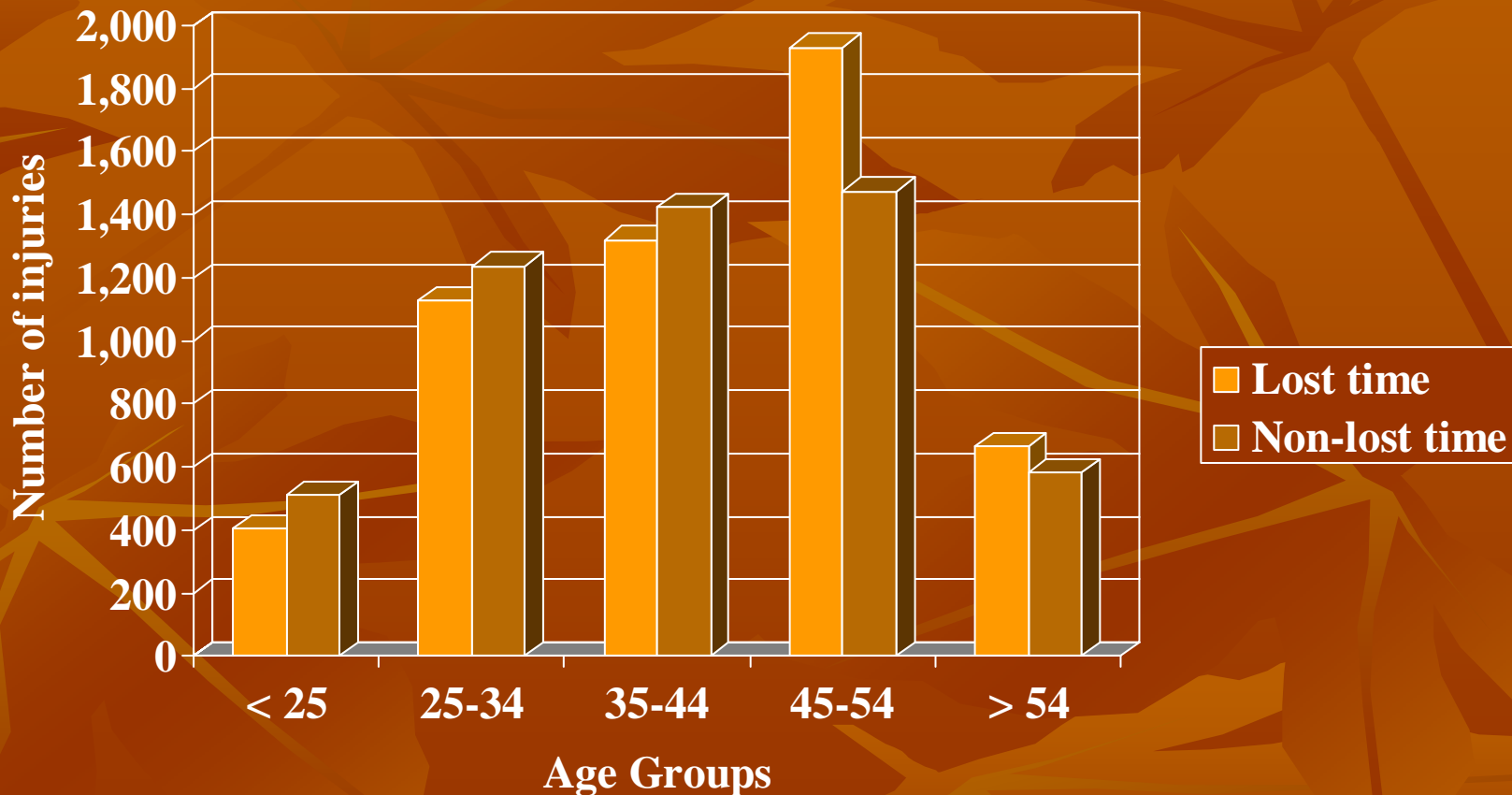
Total Days Lost BY Age Group

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

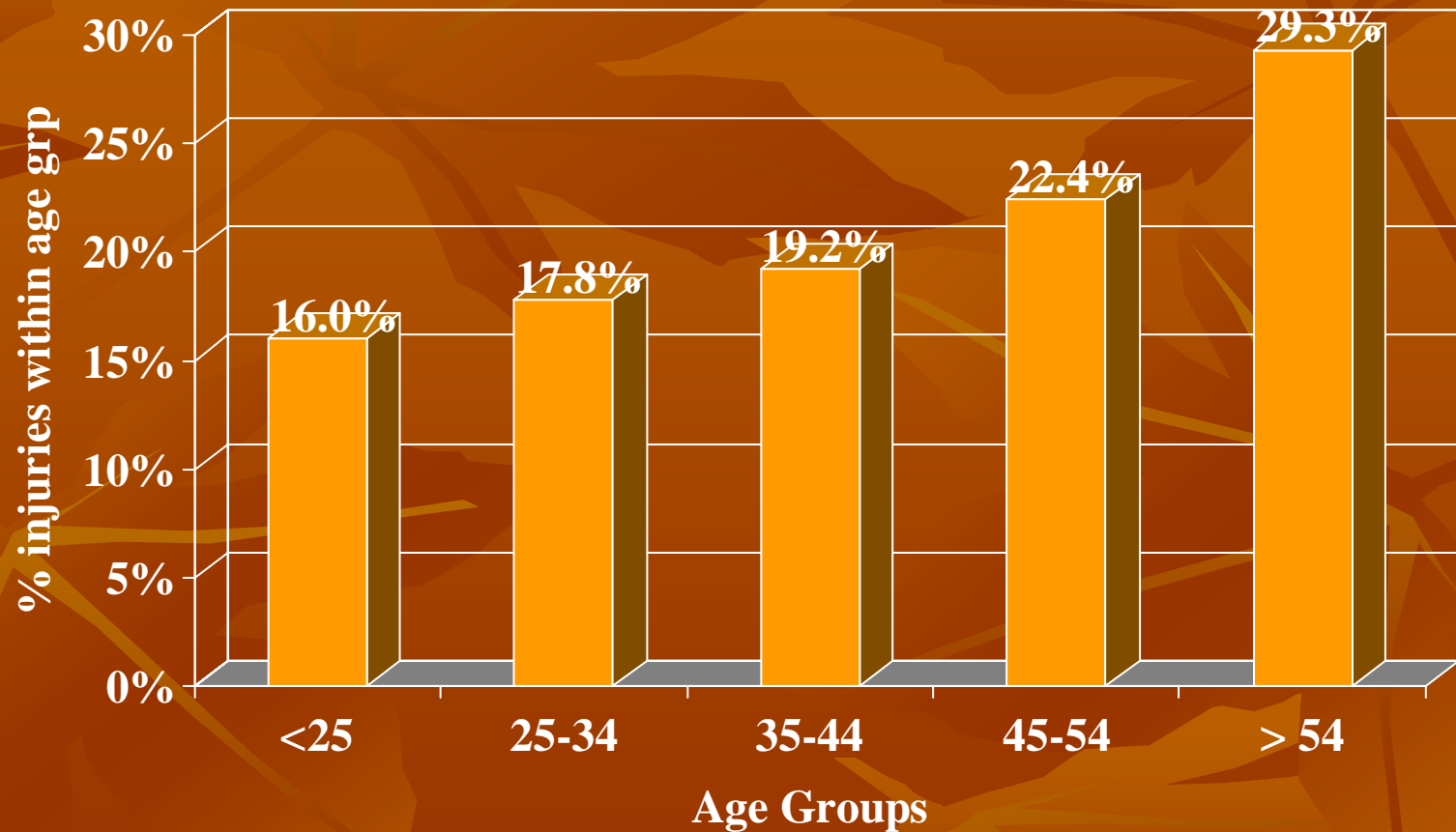
- Accident Type
 - Slips & Falls
 - Hand Tools
- Part of Body
 - Back
 - Finger
 - Knee
 - Shoulder

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

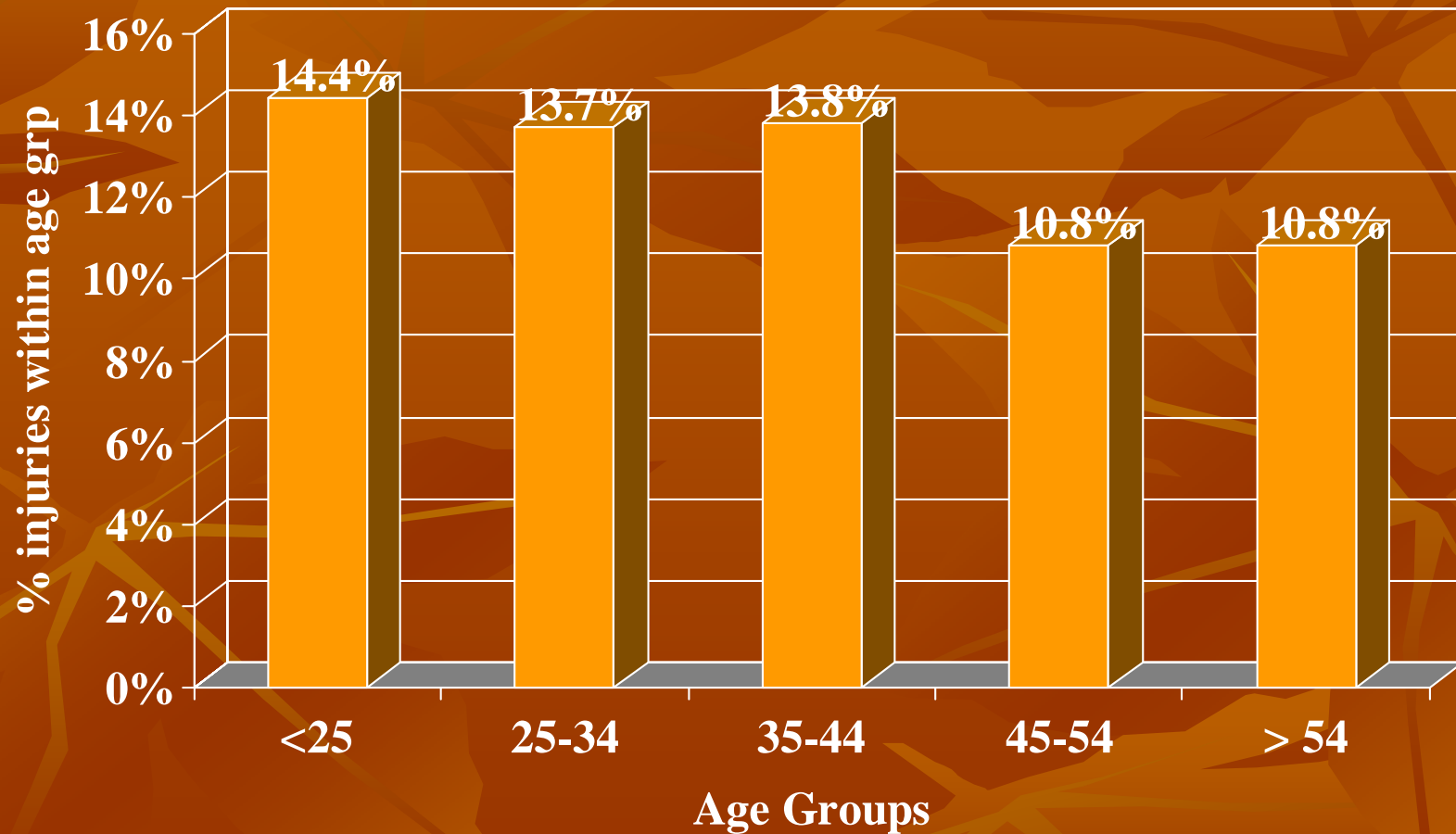
Source: MSHA 2003

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

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?

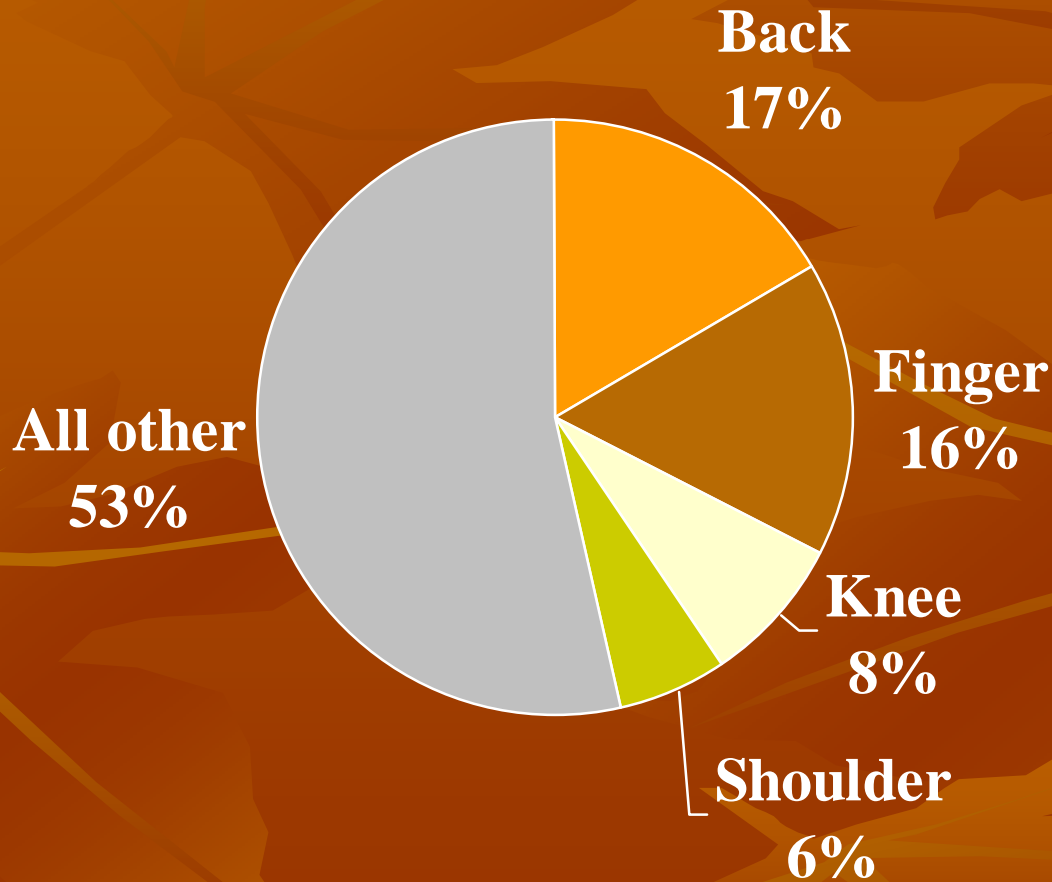
1.

2.

3.

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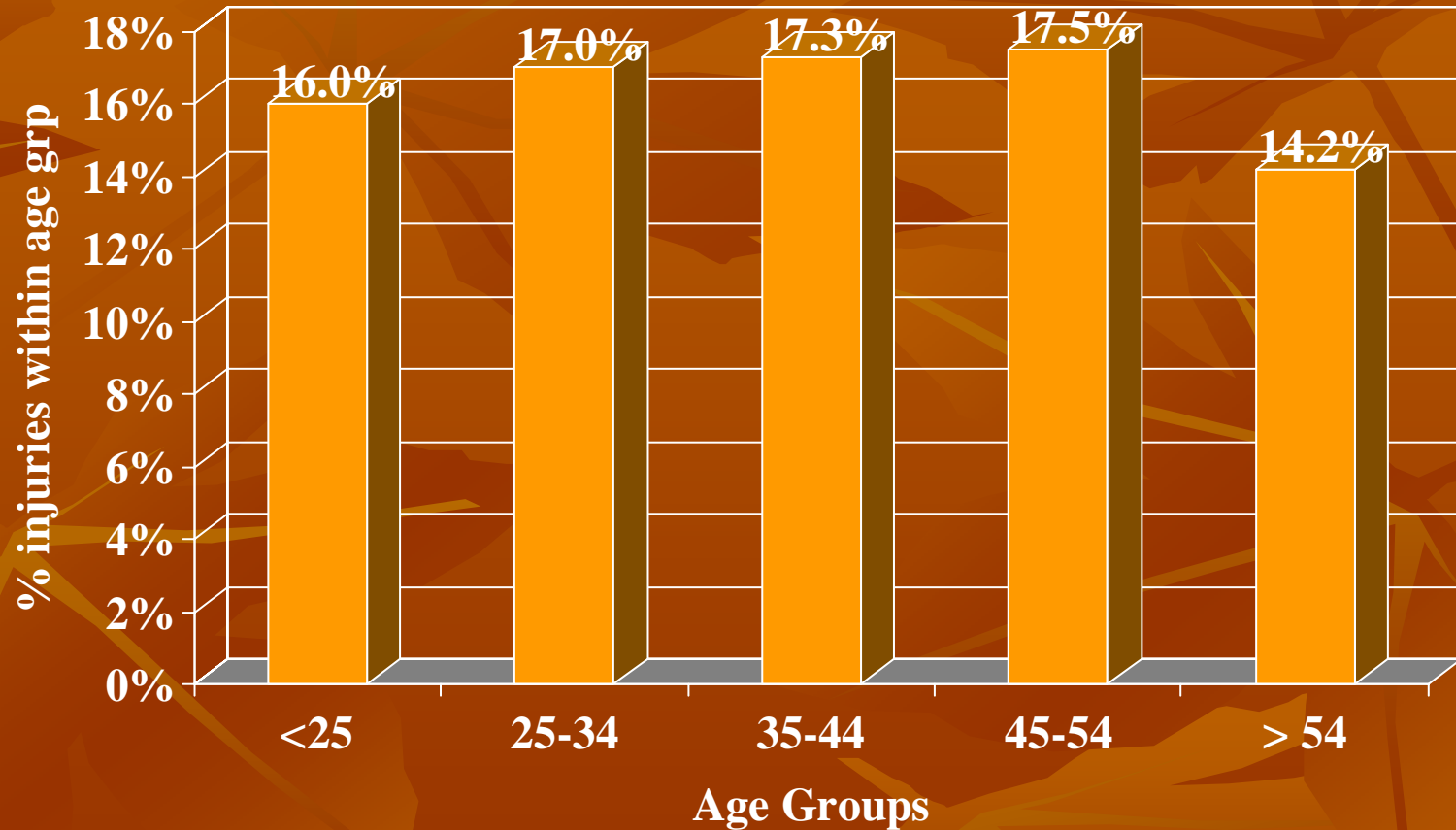
Parts of Body Injured Most Frequently



N = 10,717 injuries

Source: MSHA 2003

Part of Body: Back



N = 1,805

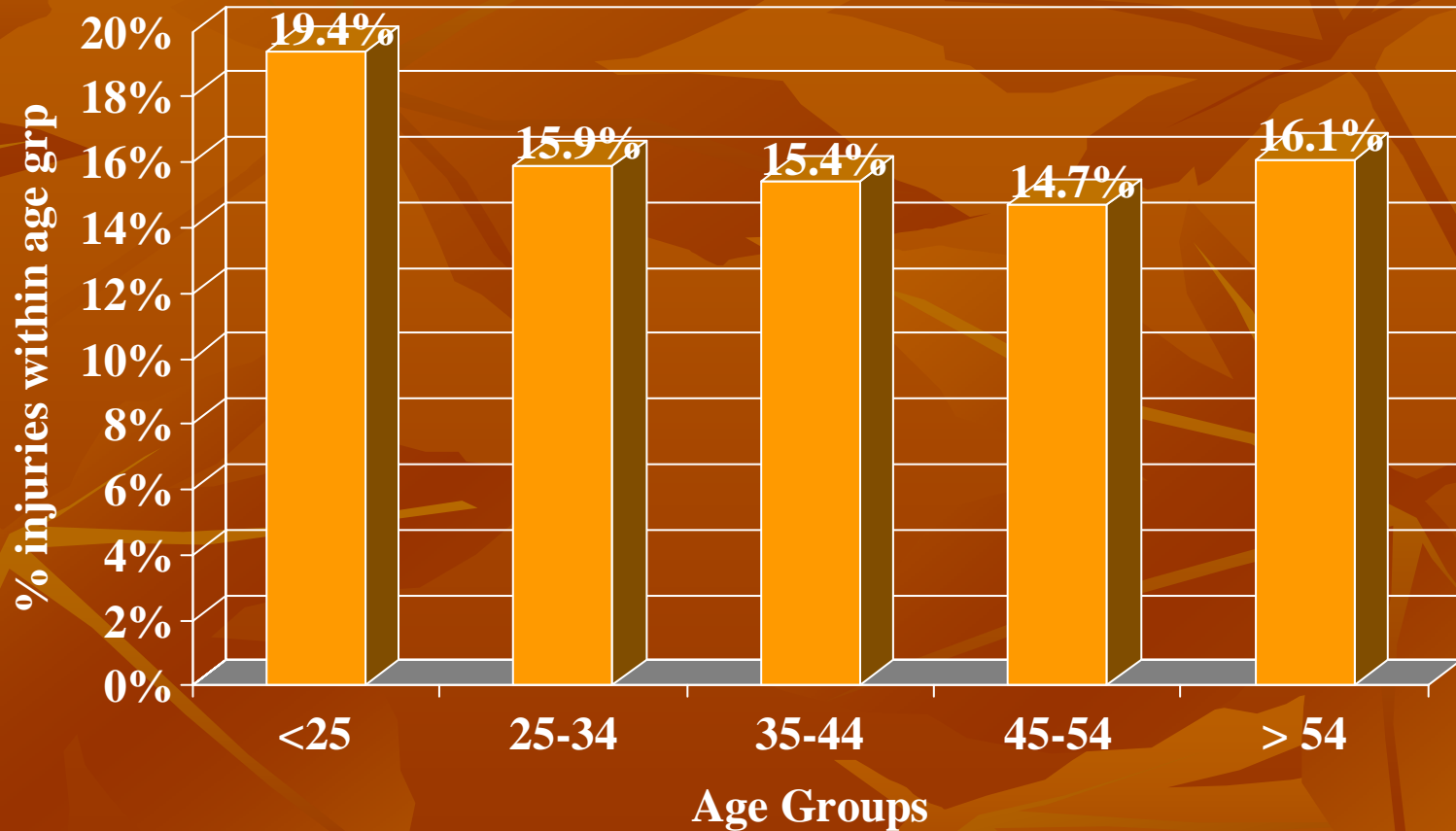
Source: MSHA 2003

As miners get older, do finger injuries account for a ...

Greater or Lesser

proportion of their total injuries?

Part of Body: Finger



N = 1,683

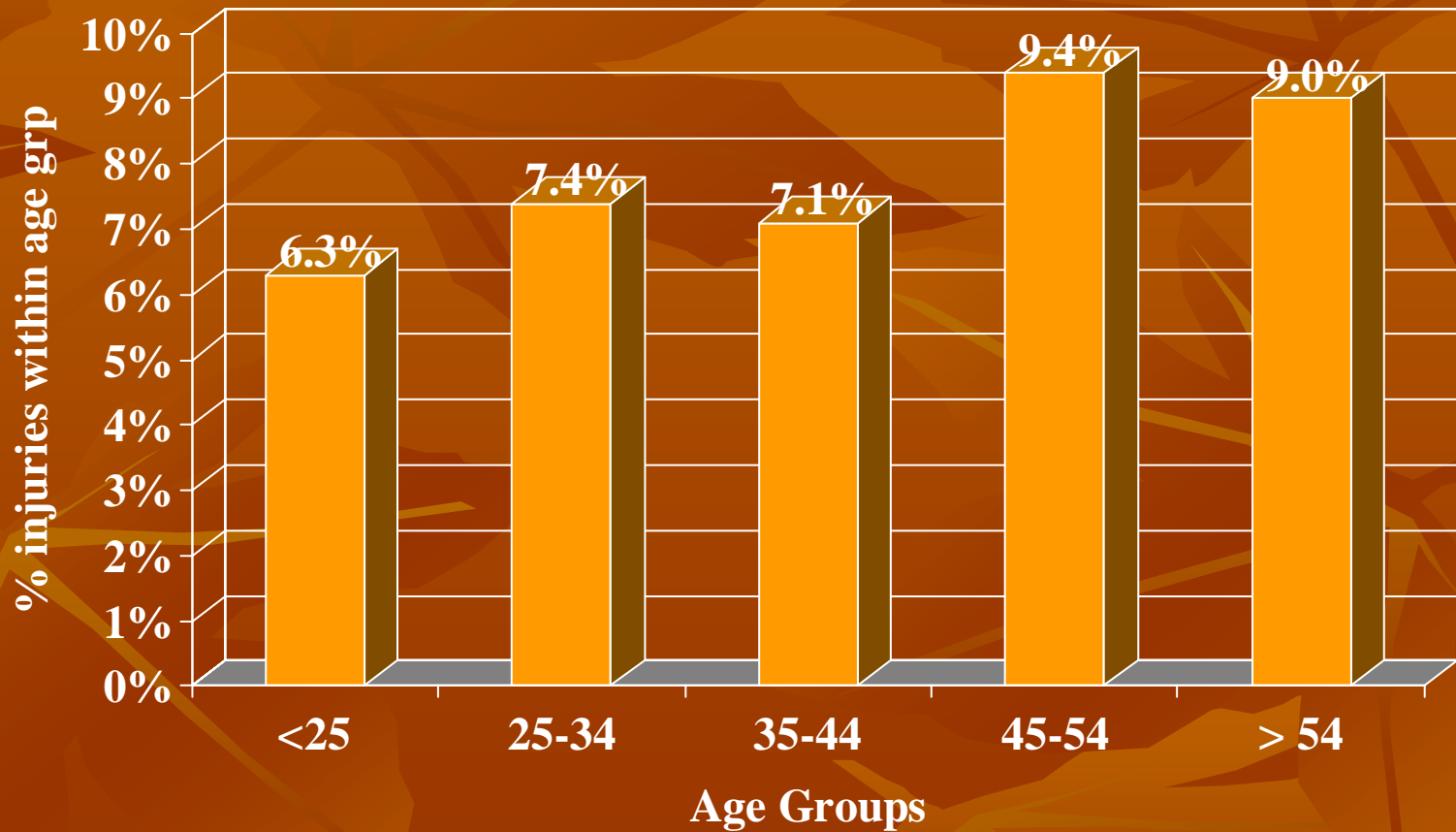
Source: MSHA 2003

As miners get older, do knee injuries
account for a ...

Greater or Lesser

proportion of their total injuries?

Part of Body: Knee



N = 862

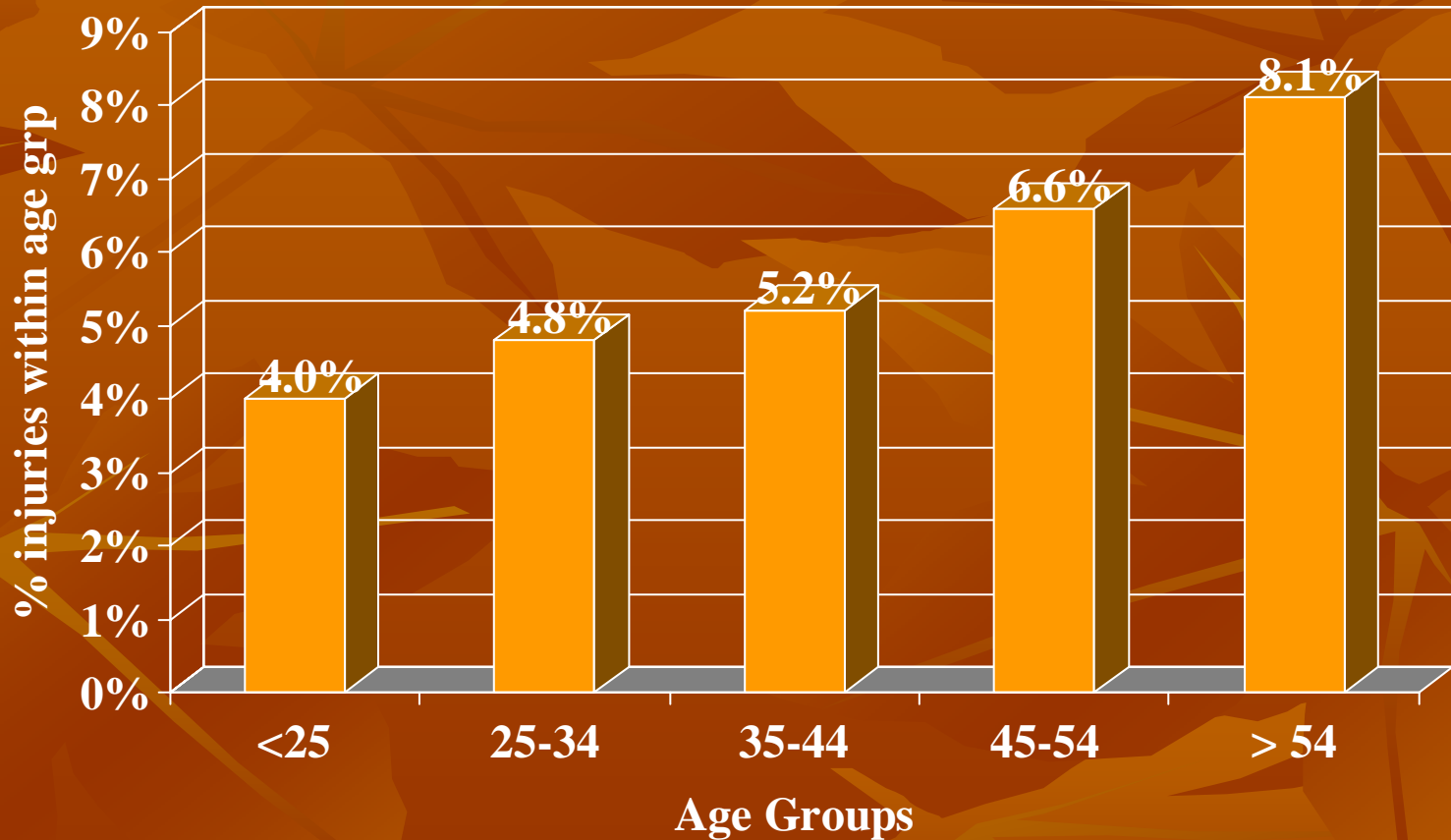
Source: MSHA 2003

As miners get older, do shoulder injuries account for a ...

Greater or Lesser

proportion of their total injuries?

Part of Body: Shoulder



N = 620

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

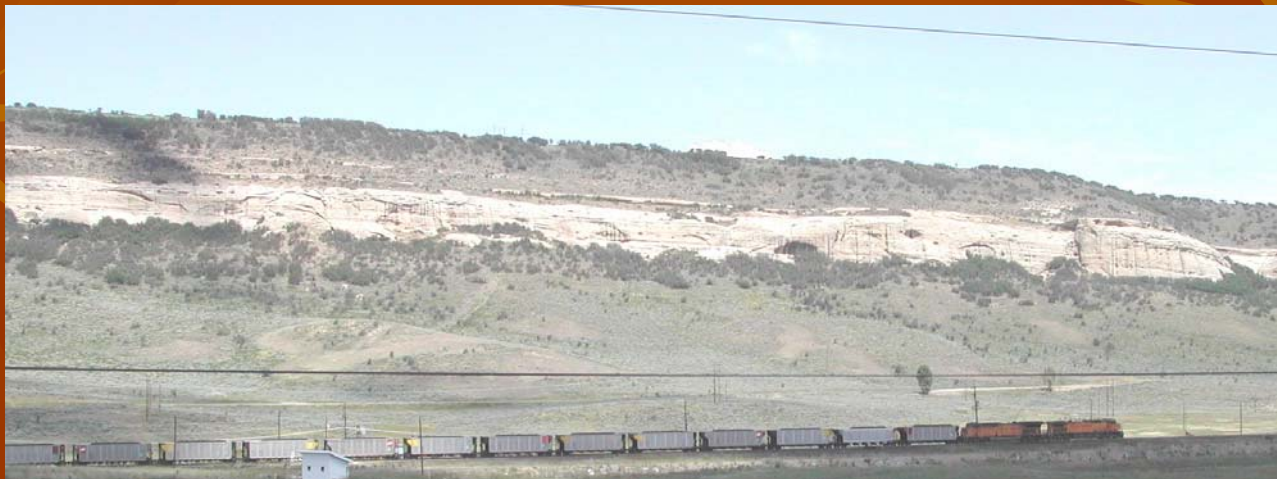
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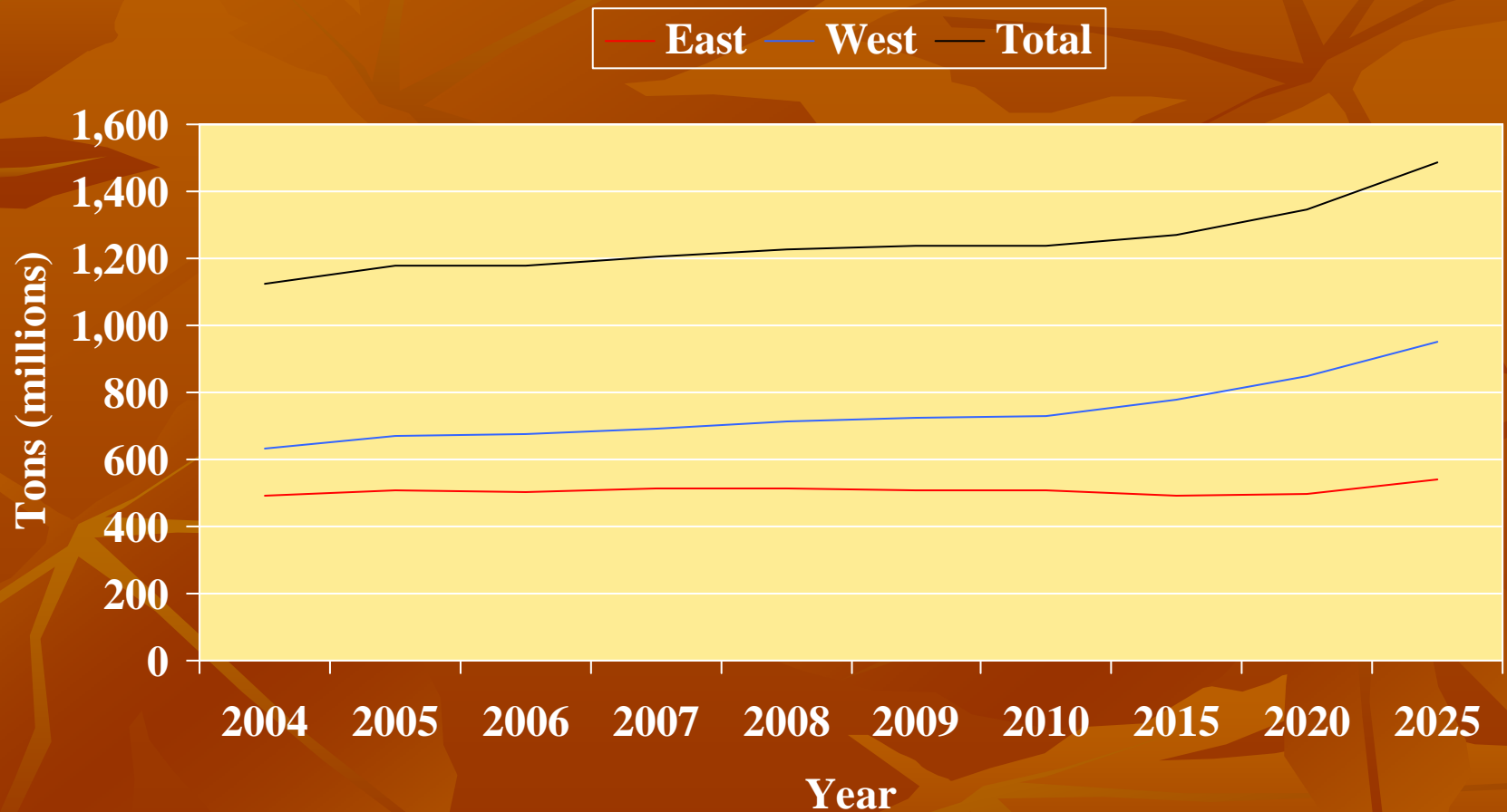
The US Energy Information Administration projects a 32% increase in the demand for US coal by 2025

2004 production: 1.125 billion tons

2025 projected tons: **1.488 billion**



Estimated Coal Production (2004-2025)



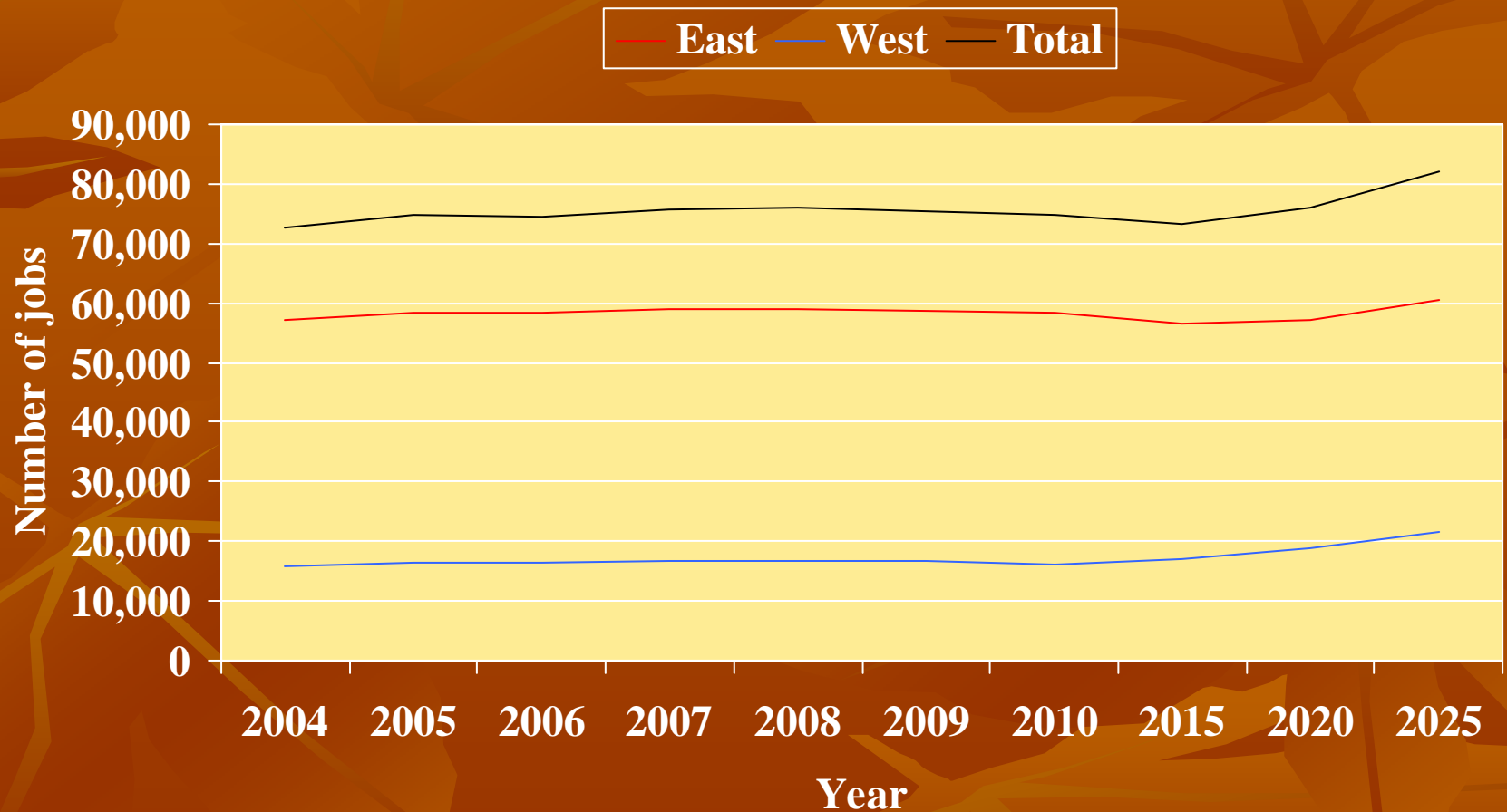
The US Energy Information Administration projects
a 12.8% increase in the number of jobs for coal
miners by 2025

2004 employment: 72,749 jobs

2025 projection: 82,103 jobs



Estimated Coal Mine Employment (2004-2025)



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

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.

Source: National Academy of Sciences,
“Toward Safer Underground Coal Mines” (1982)

Will History Be Repeated?



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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:

Contact Kim Spencer
(304)256-3252 or
spencer.kimberly@dol.gov



Thank You!

Bob Peters

Team Leader

Human Factors Research

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