

# The Aging Workforce

or

Sorry, you are not getting  
any younger

Warren Silverman MD  
Access Health Systems

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Sometimes a problem is too close to see clearly

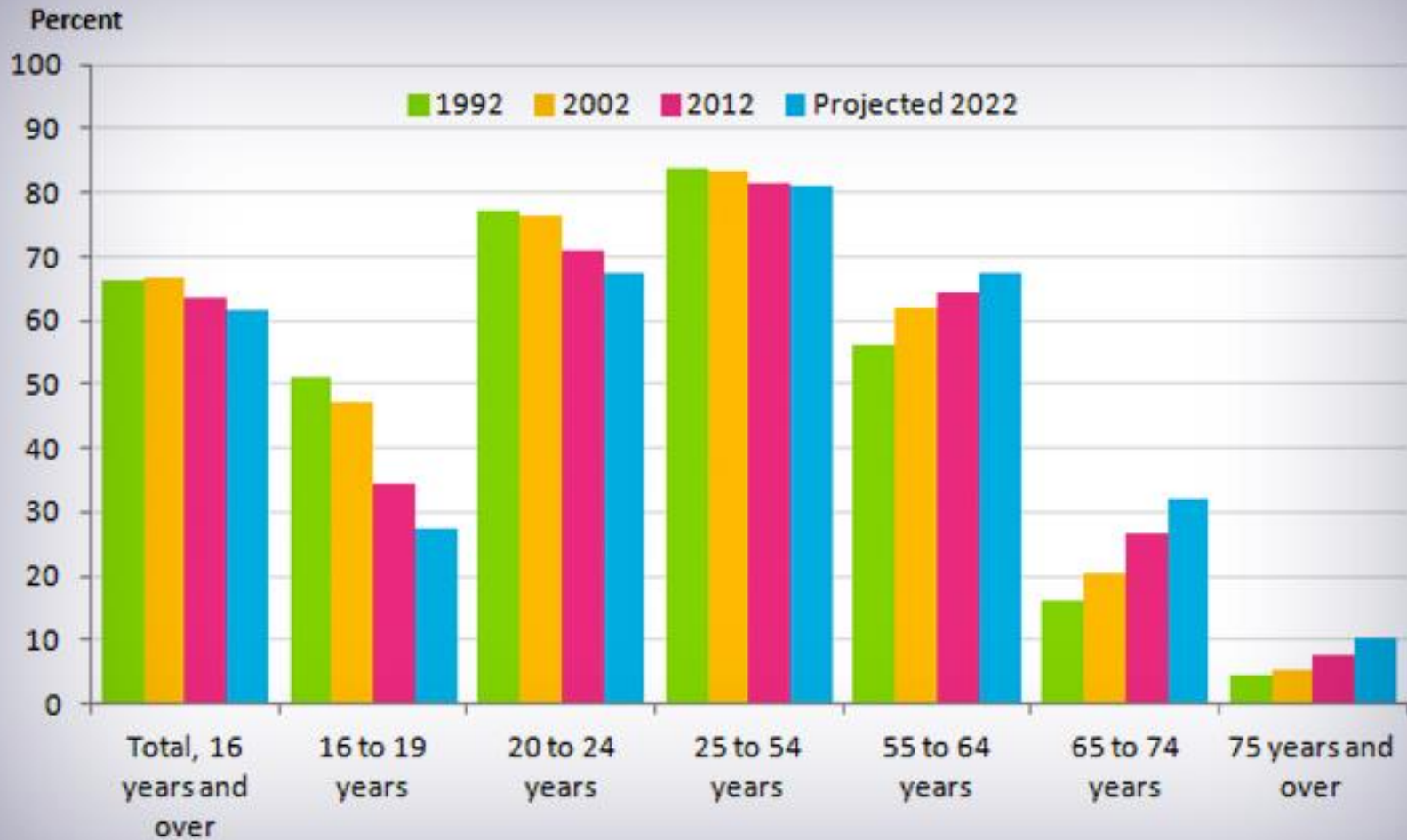


# Perspectives:

- 1977:
  - 37% of workforce < 30 years old
  - 38% of workforce  $\geq$  40 years old
- By 2016,
  - 1/3 of the workforce will be 50 or older and by
  - 2020 115 million people will be working over 50



## Labor force participation rates in 1992, 2002, 2012, and projected 2022, by age



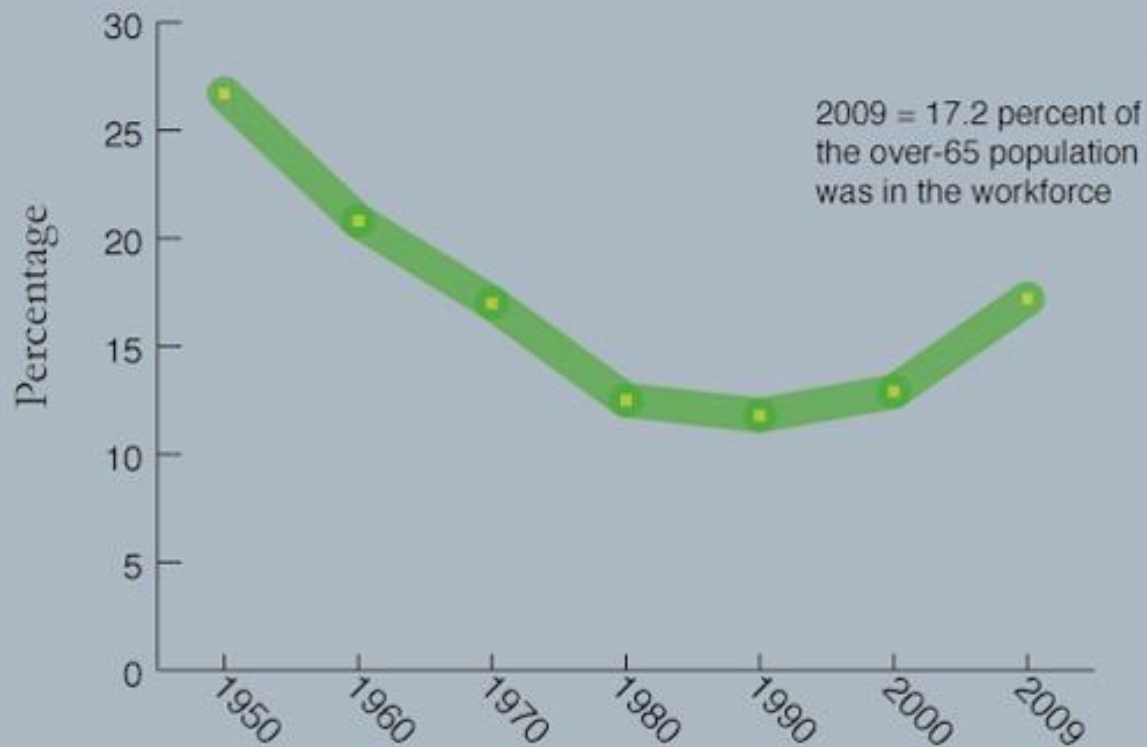
Source: U.S. Bureau of Labor Statistics.

- Life expectancy
  - 70.8 years 1970
  - 79 years 2013



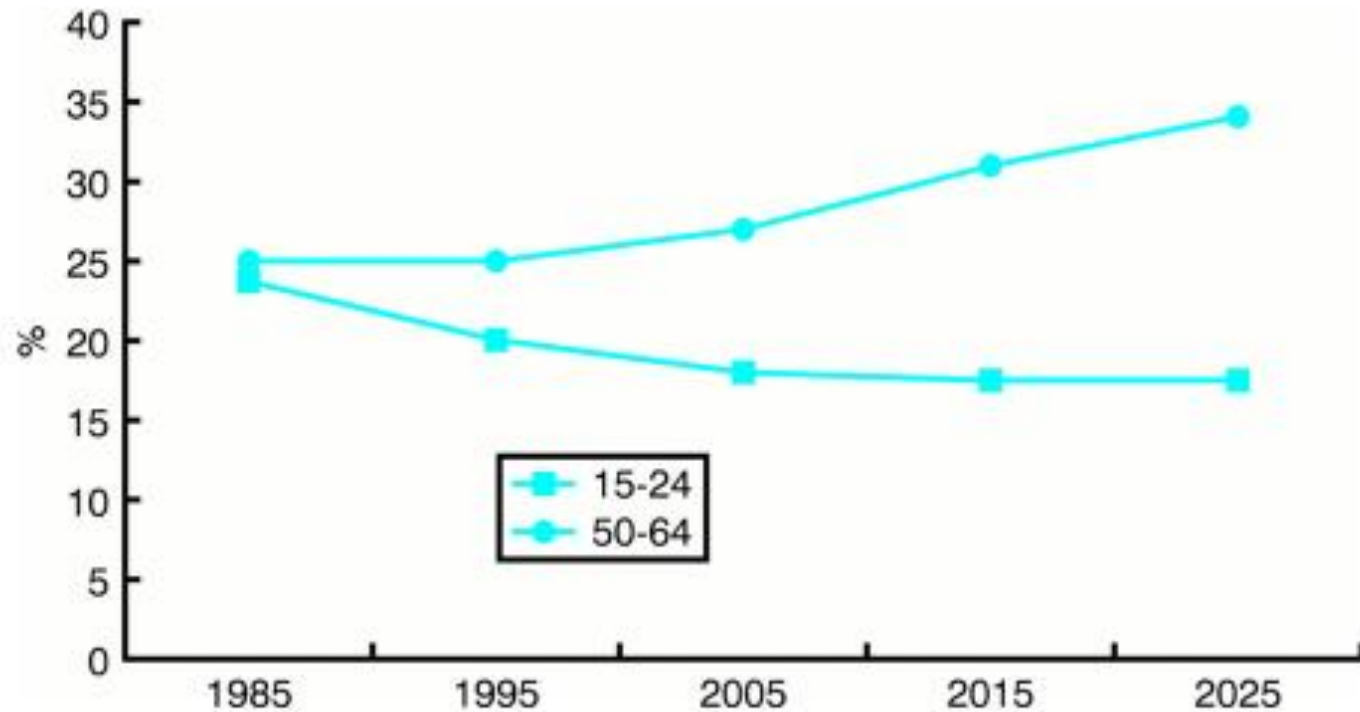
- 2 out of 5 (38%) aged 50-64 plan to work beyond 65 AND
- 31% of the remainder would consider working if they had job flexibility AND
- Another 1/5 would consider working if they could have a larger pension

## Percentage of 65+ Population in the U.S. Workforce



Source: U.S. Bureau of Labor Statistics

Expected proportion of two different age groups of workers (15–24 years, and 50–64 years) from the entire workforce (15–66 years) in the EU over the next 25 years.

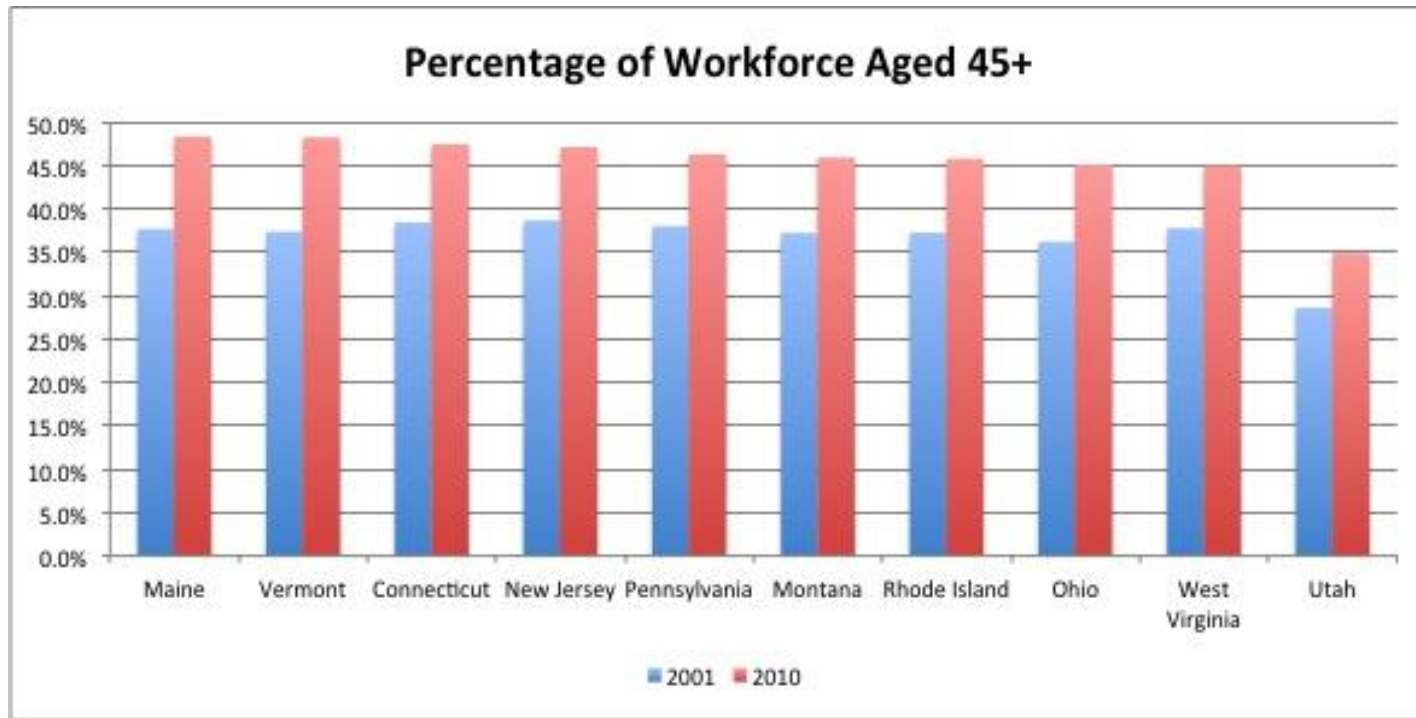


Juhani E Ilmarinen Occup Environ Med 2001;58:546

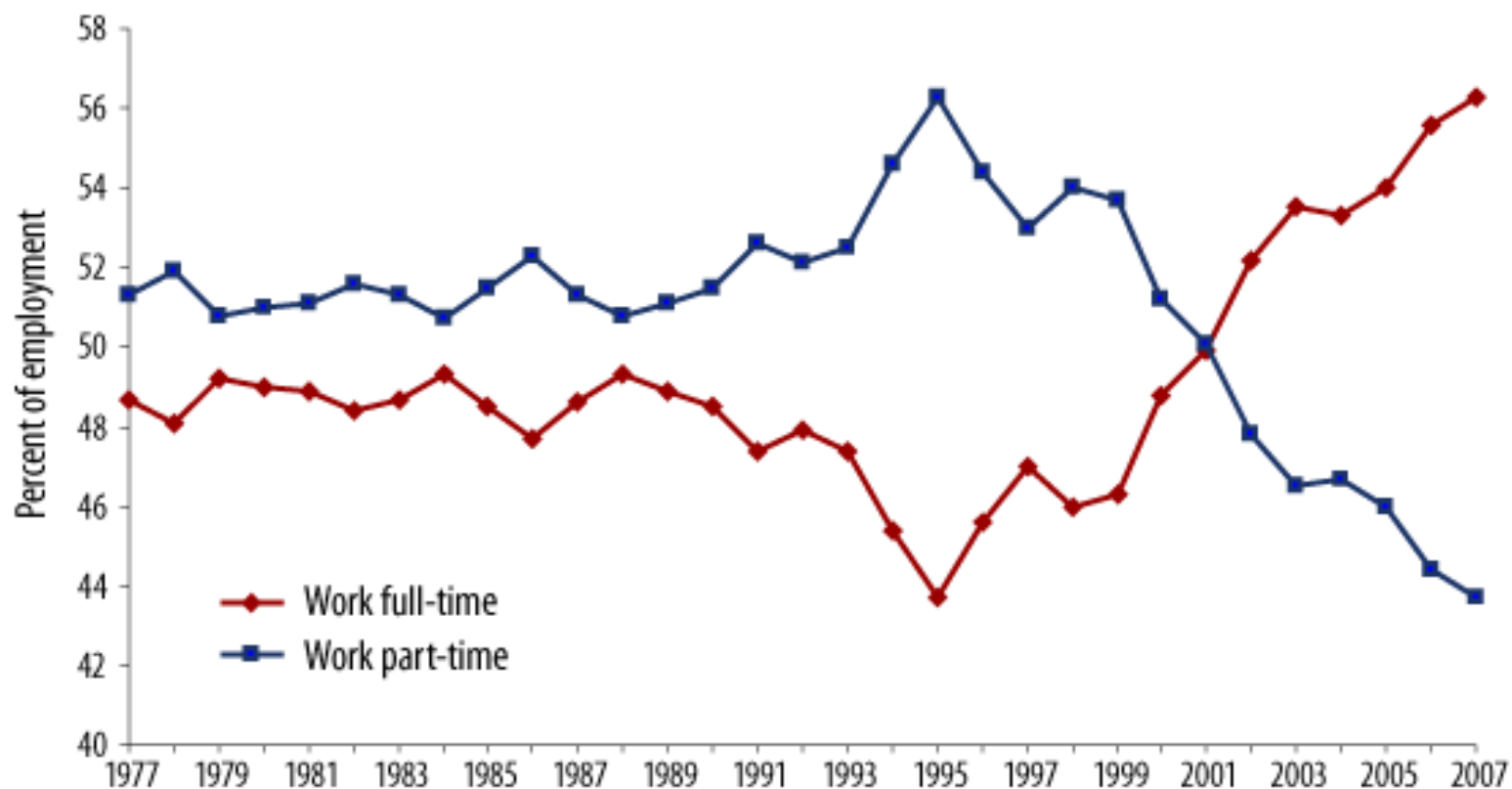


Occupation	No. Jobs (000s)	Ages of Jobholders (%)		
		55-64	65+	55+
Funeral service managers	13	23.1%	38.5%	61.5%
Motor vehicle operators, all other	63	15.9%	39.7%	55.6%
Legislators	11	27.3%	27.3%	54.5%
Model makers and patternmakers, metal and plastic	11	45.5%	9.1%	54.5%
Farmers, ranchers, and other agricultural managers	944	26.4%	26.7%	53.1%
Judges, magistrates, and other judicial workers	67	38.8%	11.9%	50.7%
Proofreaders and copy markers	10	40.0%	10.0%	50.0%
Print binding and finishing workers	22	36.4%	13.6%	50.0%
Tool and die makers	56	39.3%	8.9%	48.2%
Postal service clerks	148	43.9%	3.4%	47.3%
Clergy	408	29.4%	17.2%	46.6%
Crossing guards	61	23.0%	23.0%	45.9%
Bus drivers	558	29.9%	15.6%	45.5%
Travel agents	73	21.9%	21.9%	43.8%
Embalmers and funeral attendants	16	6.3%	37.5%	43.8%
Sociologists	7	28.6%	14.3%	42.9%
Religious workers, all other	69	24.6%	17.4%	42.0%
Models, demonstrators, and product promoters	65	27.7%	13.8%	41.5%
Construction and building inspectors	118	33.9%	7.6%	41.5%

# Regional Differences



## Workers 65 and over by work schedule, 1977-2007

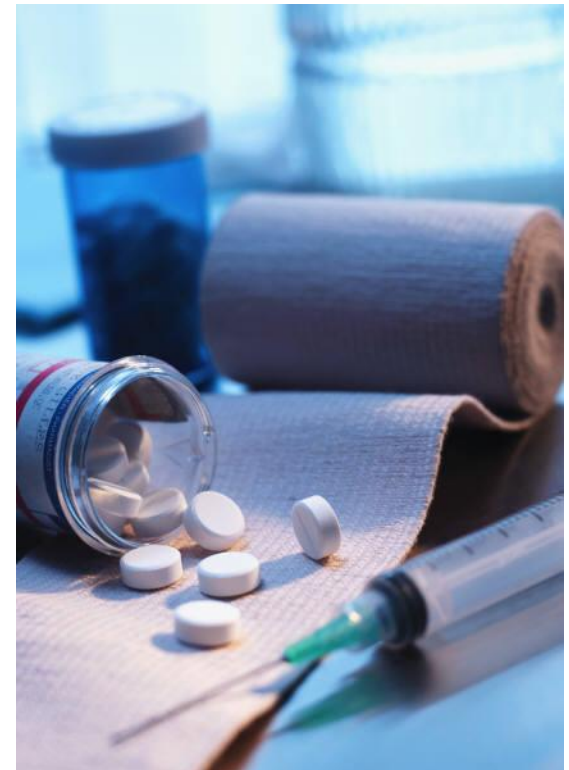


Source: U.S. Bureau of Labor Statistics

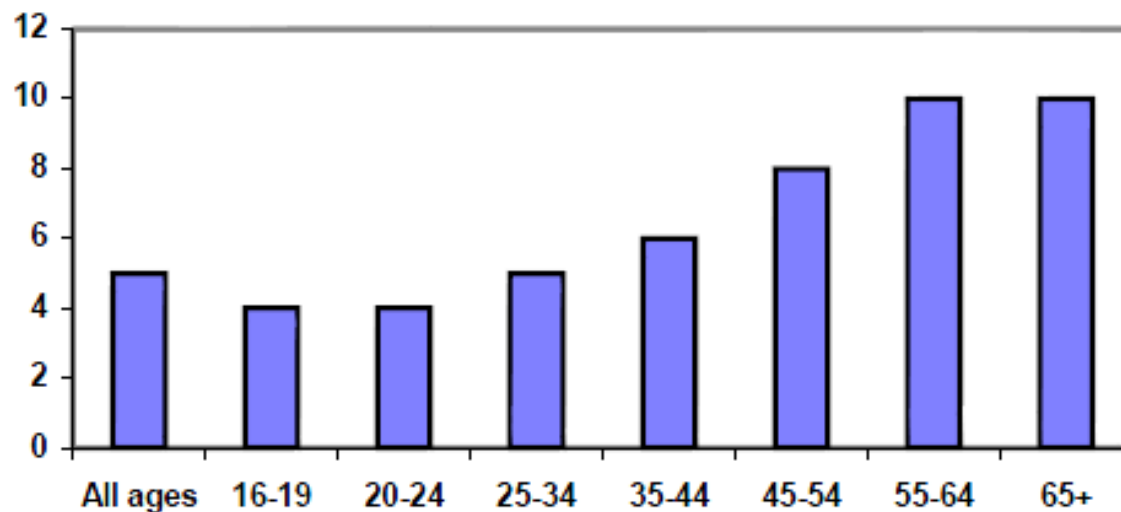
[www.bls.gov](http://www.bls.gov)

# Rates of disability

- 9.5% for workers 18-24 years old
- 20+% for 45-54 year olds
- 42 % for 65 and over
- ***Finding improved strategies for keeping people with disabilities working may give some true advantage to the employer who does so***



**Figure 4**  
**Median Number of Workdays Lost Due to Occupational Injury or Illness by Age, 1998**



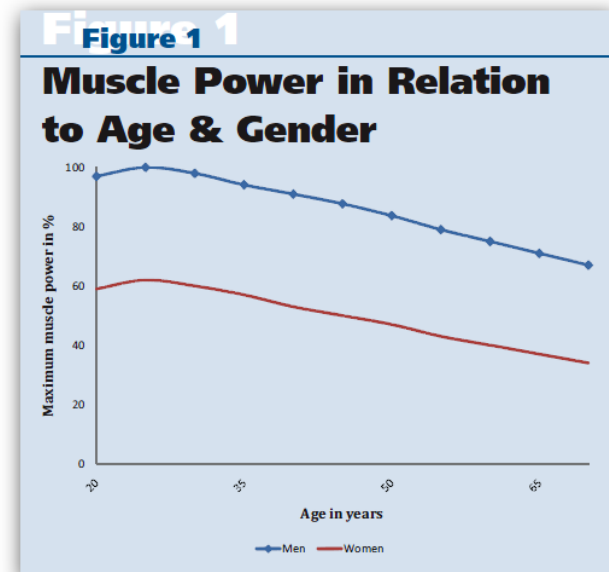
Source: U.S. Department of Labor April 2000b, Table 7

# The Mature Worker



# Strength

- Loss of muscle mass –
  - gap between physical demands and capabilities
- Peaks between age 25 and 35
- Between 50 and 60
  - only 75-85% strength
- At 65
  - 25-30% decrease



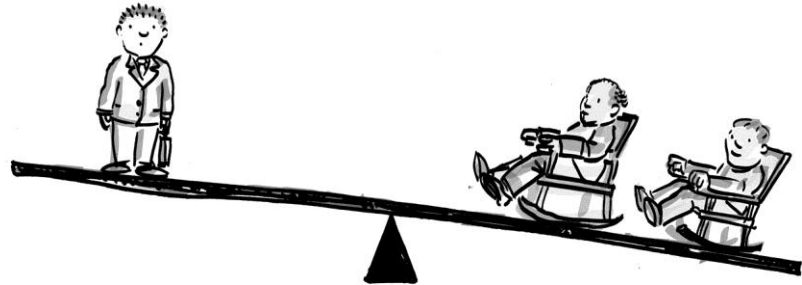
# Flexibility



- Joints :a progressive loss of cartilage from joint surfaces
- Osteoarthritic growths (BONE SPURS)can cause pain and limit motion
- Deterioration of the cartilage and elastic tissue at the molecular level
  - limits flexibility
- Self imposed limits in movement secondary to pain from various etiologies
- **18-20% loss of flexibility at 65 years old**



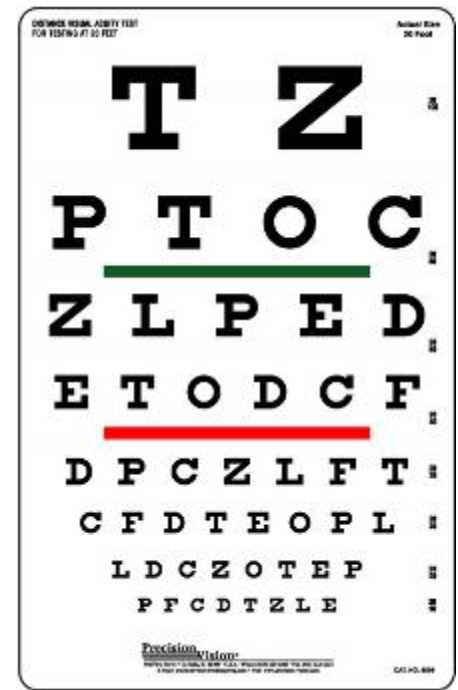
# Balance

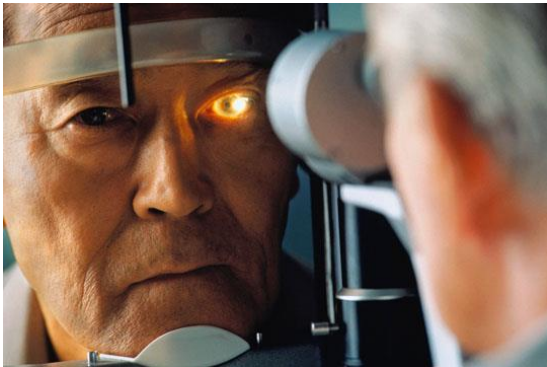


- 9% of people 65 and older experience problems with their sense of balance
  - This may be due to inner ear problems
  - This can also be due to imbalance in position sensors in the neck, back and spine or problems in brainstem and other brain tissues
- Balance disorders are a major cause of falls in elderly employees
- ***1/3 of 65 or older fall each year***

# Sight

- Loss of light transmission abilities
- Oculomotor impairment
- Cataracts
- Glaucoma, age related macular degeneration
- Loss of near vision reading ability





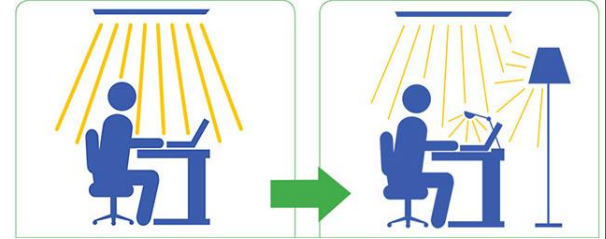
- Static vision worsens after 60
- Dynamic vision abilities start deteriorating much earlier and more rapidly
- Affects people who drive for work
- Worse if they drive at night or in dark areas such as warehouses
- ***Nighttime legibility for distant highway signs over age 60 were 65-77% of the distance for younger drivers***

# Avoid Clutter !!

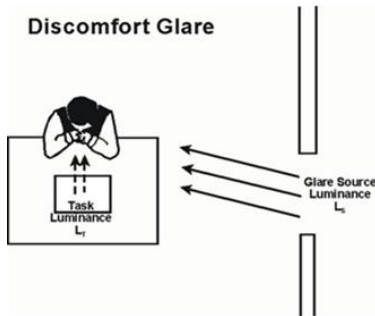
- Reduction of field of vision causing larger sweeps of vision to monitor a field
- Clutter in the field increases with age and this causes increase in response time



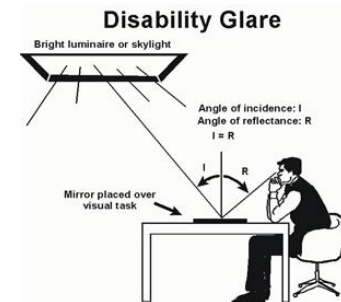
# Vision Adaptations



- Increase the illumination of the work area, however, care must be taken to avoid so much light as to cause a glare hazard for younger workers.
- Analysis of the task and the materials for optimum lighting should be done
  - Try indirect lighting, hiding the light source from direct view
  - Use shades and awnings to protect from direct sunlight



- Cover polished floors with carpet or other materials
- Avoid reflective surfaces such as glass display cases
- The use of light should be carefully thought out
- Consider adjustable light sources where there is a mix of old and young employees





- Try to keep lighting intensity similar from room to room (tunnel effect)..
  - younger workers can adapt much better than old
- Be careful with reflective painted surfaces
- ***Signs and instructions should be in large enough print with strong contrast in colors***
- Consider ANSI safety glasses that are bifocal to allow for reading ability and protection

# Reaction time and Speed

- ◉ Declines in sensory organs and muscular tissues
- ◉ Task complexity in older workers becomes problematic (harder top multi-task)
- ◉ This can be improved by
  - ◉ Training
  - ◉ Experience
  - ◉ Flexibility in the order of tasks



- Age related decline in performance is most attributable to decreased ability to manage or coordinate multiple tasks
- There may also be memory deficits, problems with behavioral inhibitions, and processing information
- Job assignment should consider these factors

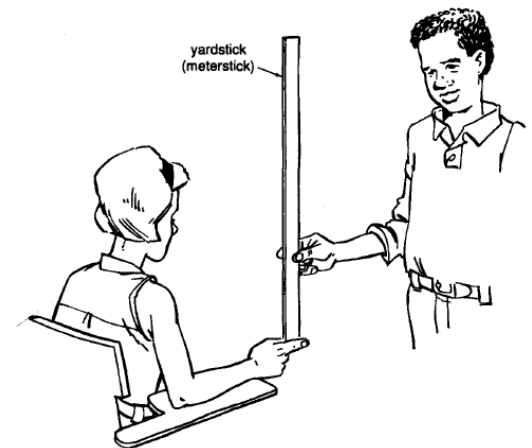


Figure 30.1

# Hearing

- ***1/3 of Americans between 65-74 have hearing problems***
- 1/2 who are age 85 or greater
- More pronounced in high frequency sounds
- Worse in men than women
- At 3000hz loss of hearing:
  - 50 years - 10 db
  - 60 years – 25 db
  - 70 years – 35 db

# Manual Dexterity

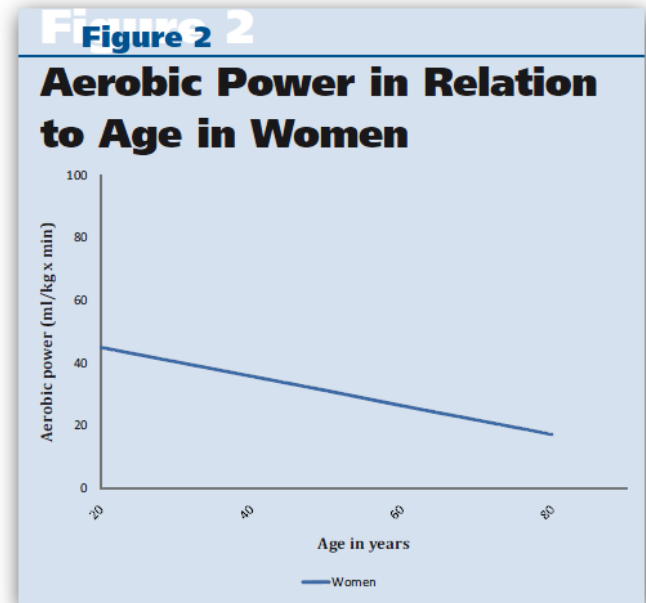
- With age loss of:
  - Manual dexterity
  - Tactile feedback
  - Fine motor skills
  - Movement
- Problems with hand tools, small parts, tiny movements for accuracy
- Consider hand tools and machine controls that accommodate the older worker

# Body Fat

- The average adult has historically gained 20-35 pounds over their adult life
- After age 50 there may be a diminishment, but this is usually due to loss of lean tissue mass rather than body fat

# Physiology

- Decreased oxygen carrying capability
  - 45 ml/kg in young woman to 25-28 ml/kg in 65 year old woman – 40% decrease
  - Due to increasing body fat, reduction of maximum ventilation capacity and cardiac output
- Arthritis and stiffening of the joints in the rib cage alone with chronic bronchitis and emphysema lead to a 25 % reduction of ventilation capacity by 65, and 50% reduction by 70



# Cardiovascular

- Maximum heart rate is estimated at 220 minus your age
- This lowers maximum oxygen delivery capability
- Obesity and decreased sweating cause the need for more blood flow to the skin with vigorous exercise

# Blood pressure

- A decrease in the cardiac output combined with impaired ability to rapidly adjust blood vessel size
- with change of posture augmented by lack of physical fitness, varicose veins and other factors can increase the risk of loss of consciousness from rapid changes in position

# Fatigability

- Physiological fatigue
- Psychological fatigue from design induced stress related to complexity, accuracy demands, noise, etc.
- More time may be needed to recover from stressful tasks
- More susceptible to temperature extremes



- Shift work issues
  - Older workers are sharpest in the early morning
  - Adaption by an early shift of 6:30 – 2:30 PM is an option for the older worker

# Training

- The older worker does well with training programs which can improve productivity
- Training in high speed problem solving and multitasking is better for the younger worker



Improving income for low wage older worker?

- The scenario of older workers being managed by young workers was rare in the past, but will be common in the future. The politics and policies of this situation should be anticipated and discussed/trained for
- The younger worker may have a different skill set



# Age focused job analysis

- 1) Identify the physical, physiological and psychological demands of the job.
- 2) Identify the physical, physiological and psychological capabilities of the worker.
- 3) Identify the physical, physiological and psychological mismatches between the demand and the capability.
- 4) Minimize the mismatches through education and training, and work, tool, equipment and environmental design.

## 1) Identify the physical, physiological and psychological demands of the job.

- This needs to be once with annual updates
- Should be for each job title
- Should include team of safety, human resources, supervisors, and current employees in this job title.
- Ergonomics specialist and/or Occupational Therapist may be brought in as consultant
- Set minimum standards for employment and annual maintenance of function



2) Identify the physical, physiological and psychological capabilities of the worker.

- This is a new program
- Functional capacity evaluations
- Expanded interview process with some additional performance testing that is specific to the job analysis
- Grading in each category should reach or exceed the minimums established

3) Identify the physical, physiological and psychological mismatches between the demand and the capability.

- If there is a mismatch, determine if there is a potential to bring the candidate up to speed, or if already employed to return them to a functional standard



4) Minimize the mismatches through education and training, and work, tool, equipment and environmental design.

- ◉ Develop new training programs which deal with issues of the aging worker.
- ◉ This may include designing tasks to be linear and more focused (less complex)
- ◉ Consider assigning driving tasks to younger employees
- ◉ Provide accommodating tools and machining for the limitations of the older worker



## Design Considerations

### Task design

- 1) posture;
- 2) force;
- 3) repetition;
- 4) boredom versus complexity;
- 5) rate, duration and recovery;
- 6) static versus dynamic muscle activity.

### Workstation design

- 1) sit versus stand;
- 2) work surface height;
- 3) reach zones;
- 4) work envelopes;
- 5) visual zones;
- 6) chairs;
- 7) slanted surfaces;
- 8) sharp edges;
- 9) footrests
- 10) floor mats/insoles;
- 11) shelving.

### Environmental design

- 1) lighting;
- 2) temperature;
- 3) noise;
- 4) vibration;
- 5) clothing;

- 6) footwear;
- 7) gloves;
- 8) office design.

### Tool design

- 1) grips;
- 2) leverage;
- 3) weight;
- 4) balance;
- 5) triggers;
- 6) torque;
- 7) vibration;
- 8) handle design.

### Manual materials handling design

- 1) push versus pull;
- 2) manual materials handling guidelines.

### Equipment design

- 1) knobs and switches;
- 2) control locations;
- 3) lighting;
- 4) keyboard and mouse;
- 5) lettering and character size;
- 6) analog versus digital;
- 7) colors.

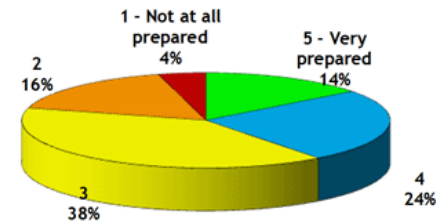
# Human Resources Aspects

And  
The concept of Work Ability

# Who is prepared?

- 25.8% employers – had not analyzed their workforce demographics at all
- 12% - had actually done it to a great extent
- 36.7 made no projections for retirement
- 9% had done it to a great extent
- 30.7% had adopted policies to recruit employees of diverse ages
- 16.5% had not done so at all

Two in Five Employers Suggest They Are Prepared to Accommodate Older Workers  
One in Ten Say They Are Very Prepared



# HR Challenges

- Formalize the transfer of skills and knowledge between generations –
  - Mentoring
  - Shadowing
  - Formal in house training

# Addressing the specific needs of the older worker

- More time away from workplace
- Taking care of older parents or spouses
- Increased fatigue
- Physical limitations

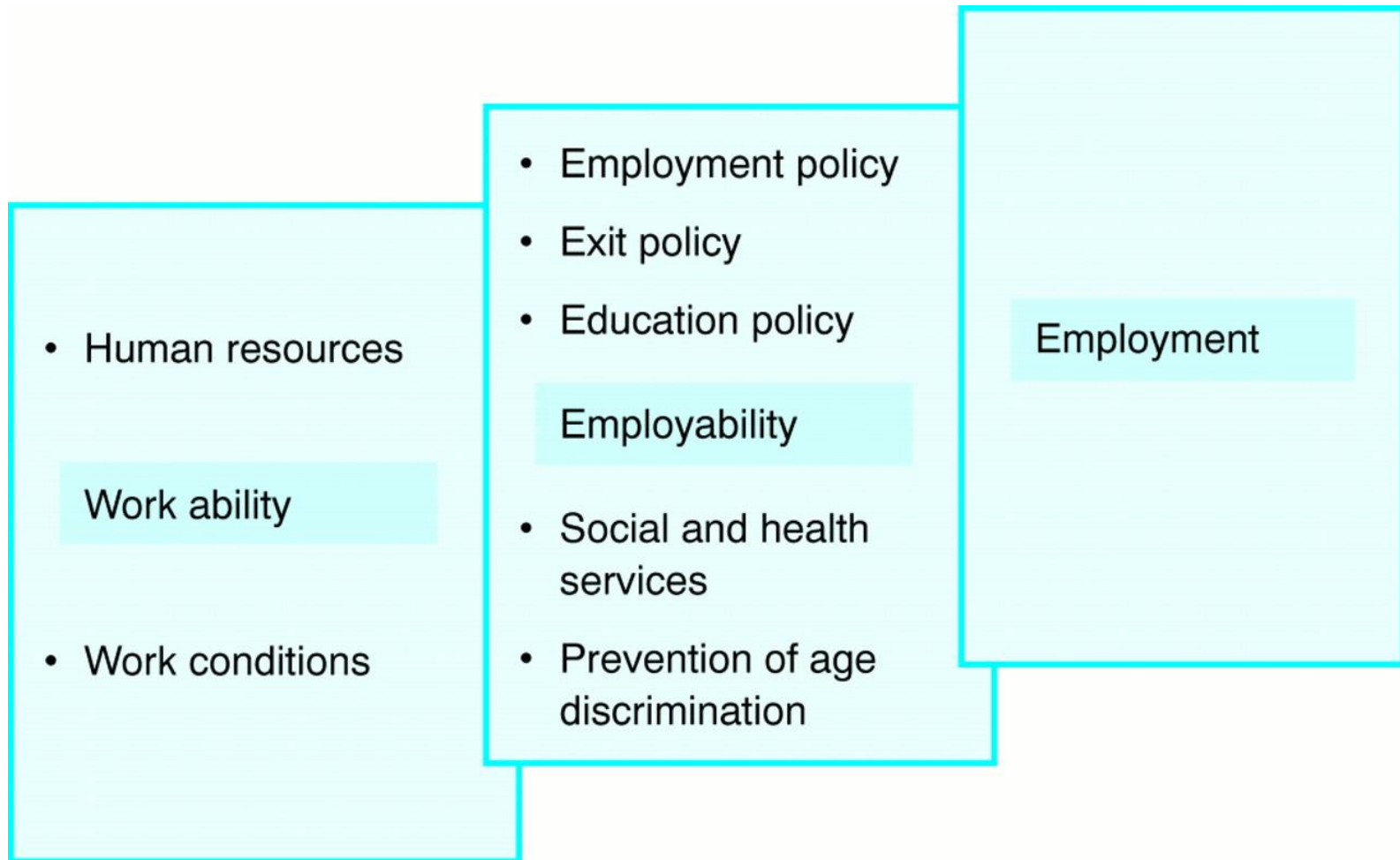
# Consider phased retirement

- Downshifting to part-time,
- moving to a less intense job within an organization, or
- returning post-retirement to volunteer at a former workplace
- The goal of phased retirement is to continue to have a relationship with a valuable employee while transferring their knowledge

# Generational Issues

- Make adversaries into allies.
- A younger employee : when an older person sticks around, they may resent the lack of advancement
- A worker with 35 years on the job challenged by new technologies—from Web-based communications to automation—that the entry-level person embraces.
- A younger worker supervising an older worker

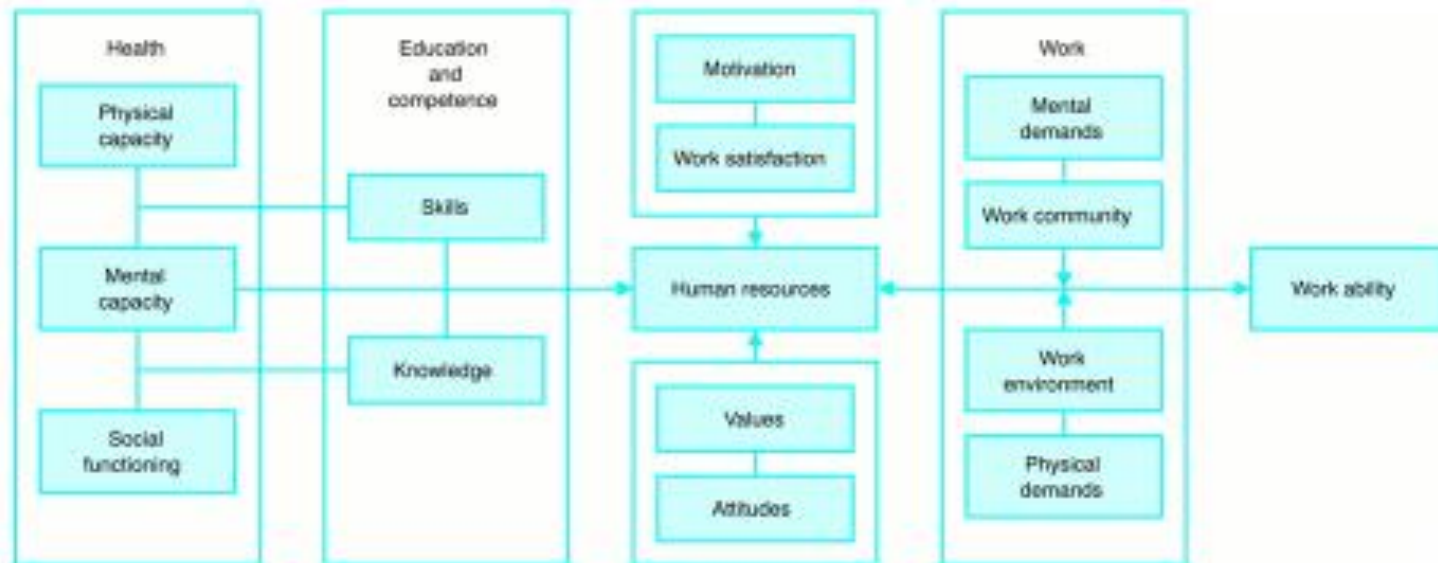
## Relation between work ability, employability, and employment.



Juhani E Ilmarinen Occup Environ Med 2001;58:546



**New concept of work ability, emphasising that individual work ability is a process of human resources in relation to work.**



Juhani E Ilmarinen *Occup Environ Med* 2001;58:546

# Maintenance of function

- A paradigm shift in Wellness
- Safety
- Productivity
- Quality
- Institution of administrative, procedural and engineering controls to deal with all three

# Annual Testing

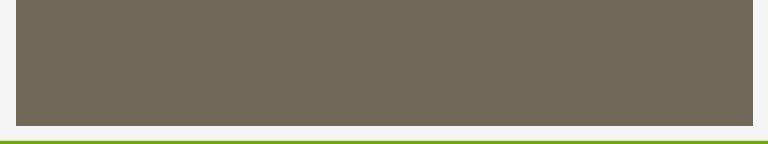
- Job specific physical performance standards and testing
- Cognitive and psycho-diagnostic testing if job task appropriate
- As deterioration is noted:
  - Accommodations in task, responsibility,
  - Occupational Rehabilitation to standard
  - Reassignment
  - Limitation

# Preventative Wellness

- Comorbidities
  - BMI
  - Diabetes
  - Smoking
  - Physical fitness
  - Arthritis / Musculoskeletal limitations
  - Vision
  - Hearing

# Administrative Controls

- Education and training
- Job assignments and placements
- Job rotations and breaks
- Stretching programs
- Exercise, strength, conditioning and health programs
- Return to work strategies



# Workers Compensation

- Awareness of trending
  - Orthopedics of chronic degeneration versus acute injury
  - Layering of co-morbidities
  - Past medical history

# The other side of the coin

- By 2020, 25 million baby boomers will make up 40% of the work force and will begin to leave in large numbers
- They will take their experience with them
- They will leave a major shortage of workers to fill their spots
- Retaining the elderly worker will offer distinct advantages



Filling a vacant position costs between 25-250% of the position's annual salary

- Baby Boomers will have 4-6 jobs over their lifetime
- GenX 10-12 jobs over their lifetime
- GenY will change jobs every one to 2 years
- Millennials 15-20 jobs over their lifetime
- Retaining skilled employees is a major cost savings

# What is wrong with this picture



"NEVER MIND ABOUT THE BIRDS AND THE BEES, DAD. TELL ME ABOUT EARLY RETIREMENT."



"I was a lawyer for a start-up tech company, taking my pay in stock, and after they went public, I retired at age 26!"



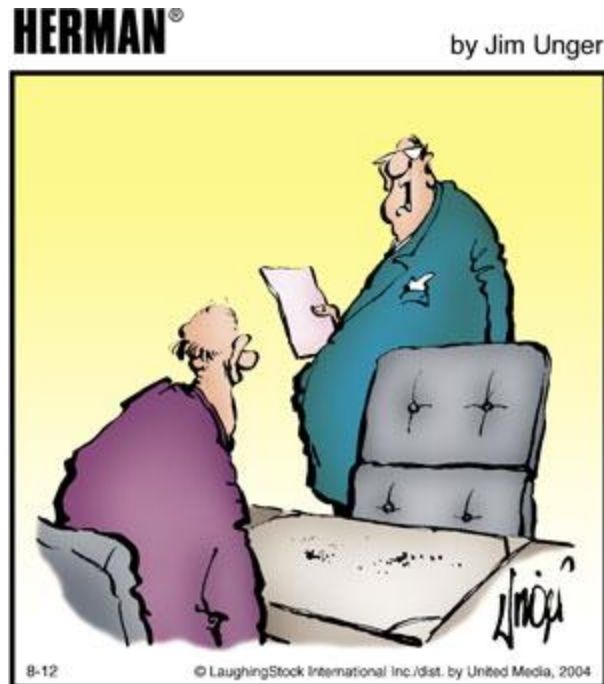
"I've been offered early retirement but my wife won't let me take it."

# Recruitment –

- Select individuals with specific talents, experiences, and perspectives from diverse age groups.
- include age diversity in recruitment strategy.
- hire retirees
- Create competitive benefit package designed to address both the financial concerns and benefit utilization among older workers.



# Retirement Planning as part of the Human Resources discussion



**"I know you're three weeks away from retirement, but it's either fire you now or I have to fork out for another gold watch."**

# AARP Workforce Assessment tool

- [http://www.aarpworkforceassessment.org/#manage\\_account](http://www.aarpworkforceassessment.org/#manage_account)