Outline of talk

• Data on aging and the aging workforce
• Relationship between age and health
• Relationship between age and job performance
• Physical and cognitive abilities of older workers
• What can / should workplaces do?
Aging of the population

... in Western societies
Increase in life expectancy, 1600 - 2000
Oepen and Vaupel, Science 2002; C Finch adaptation

Phase 1
early urban

Phase 2
sanitation-nutrition

Phase 3?
regeneration
modern medicine
Social Policy Innovation

Legend:
- England
- Norway
- New Zealand
- Iceland
- Netherlands
- Sweden
- Japan

Graph shows life expectancy trends from 1550 to 2050, highlighting phases of urban sanitation, sanitation-nutrition, and potential regeneration.
Reason for increases

Reduction in mortality rates
Changes in population *structure* result from ...

- Reduced mortality
- Reduced fertility rates
Canada age ‘pyramid’ 2011

Statistics Canada
Observed (1981 to 2010) and projected (2011 to 2031) percentage of labour force aged 55 years and over according to five scenarios

Statistics Canada, 2012
Absence rates due to illness/disability for full time employees, 2011

Source: Statistics Canada
Absence rates due to personal or family responsibilities for full time employees, 2011

Source: Statistics Canada
Implications for work and workforce - 1

• Proportion of population in older age groups is increasing
• Employment rate in older age groups is increasing
• Retirement may be delayed – voluntarily and involuntarily
• Caregiving
  • Formal
  • Informal
Implications for work and workforce - 2

• Need to keep older workers in the workforce to prevent economy from becoming smaller – *but not at expense of young workers*

• Society and organizations need to maintain capability of older workers to be productive
Implications for work and workforce - 3

• Various policy options - e.g., raise the standard pension age
• More (temporary) migrant workers doing dirty, dangerous work
  • Language barriers
  • Less training
  • Less empowerment
  • Fewer rights
Some uncertainties

• Types of jobs in future - automation, robots, outsourcing – and where they will be
• How much delayed retirement?
• Demographic trends – fertility, migration, catastrophic events
• Global and local economic situation – levels of (un)employment, etc
Two questions

• What will persuade older workers to stay in employment?
• How to ensure they remain healthy and productive?

Amanda Griffiths, 2009
Hypothetical relationship between age, worker capacity and job demands

Smith P with permission. Adapted from Ilmarinen 2002.
What is an ‘older worker’?

- Different definitions of age:
  - Chronological
  - Subjective
  - Social age
  - Relative age
  - Legal
  - Biological

- US Age Discrimination in Employment Act
  - Prohibits discrimination against over-40s

- May be chronologically 45+ or 50+ or 55+
Historical views of ‘older workers’: first part of the 20\textsuperscript{th} Century

- “women begin to break down in their thirties”

- “men [over 40] lack the essential flexibility of body and mind and suffer with impaired health”

Common attitudes of businesses described by Alsaker (1939); cited by Veit (2012)
Relationship between age and health
- and health and safety implications
- and some workplace solutions

Note: Many solutions are simply enhanced good health and safety practice
Sensory changes with (normal) aging - 1

- Hearing
  - Acuity - especially at high frequencies ↓
  - Noise-induced hearing loss irreversible
  - Distractibility ↑

Ensure audible warnings or don’t rely on them alone
Decrease noise to avoid distraction
Eliminate possible echos
Avoid high frequency sounds
Sensory changes with (normal) aging - 2

• Vision
  • Flexibility of lens ↓
  • Poorer vision in dark conditions
  • Colour sensitivity ↓
  • Ability to distinguish contrasts ↓
  • Sensitivity to glare ↑

Increase font sizes
Use soft white reader bulbs, glare free screens
Strengthen contrasts, e.g., at edge of stairs, but avoid sudden changes in illumination
Allow for reduced field of vision
Allow for use of glasses (bifocals, trifocals)
Health changes with (normal) aging - 1

• Musculoskeletal system
  • Strength, mobility/flexibility, bone density ↓

  Reinforce ergonomic programs

• Cardio-respiratory system
  • Lung function ↓
  • $\text{O}_2$ exchange rate ↓
  • Arteries thicken / harden

Ensure sufficient breaks, rotate tasks, etc
Health changes with (normal) aging - 2

- Reduced thermo-regulation
  
  Limit work in extreme heat or cold

- Skin
  - Stretches less easily
  - Permeability ↑

  Ensure skin protection, prevent trans-dermal exposures
Health changes with (normal) aging - 3

• Sleep problems ↑
  Limit need for alertness
• Prevalence of chronic diseases ↑
  Determine work limitations
• Possible interactions between medication and workplace exposures
  Consider impact of drug and toxic exposure combinations
Health changes with (normal) aging

• Pattern of injuries changes – more slips, trips, falls
  Handrails, limit working at heights, better lighting

• Recovery time from injuries / illnesses ↑
  Increase accommodation options
Cognitive changes with (normal) aging - 1

• Cognition
  • Crystallized cognition $\uparrow$
  • Fluid cognition, working memory $\downarrow$
  • Cognitive declines probably start in middle age, more pronounced in late 60’s, early 70s

Ensure demands of job are related to cognitive abilities

• Personality
  • More conscientious, agreeable
Work and Cognitive Function

• Systematic review by Then et al. (2014)
• Included several long-term cohort studies
• Adjusted for many confounders
• Main result: *High job control and high job complexity both protective against cognitive decline and dementia*
Relationship between age/older workers and ‘job performance’
Stereotype of older worker

• Less physically and cognitively able
• More problems with co-workers
• Want more time with families
• Less technologically savvy
• More resistant to change
• More difficult to change

• Hence, lower job performance
Ng & Feldman, 2008

• Challenged this view in systematic review of literature
• Argued that there are more dimensions of ‘job performance’ than simply ‘core task performance’
Extra dimensions of job performance

• Citizenship behaviour
  • Creativity
  • Performance in training programs
  • Organizational citizenship behaviour
  • Safety performance

• Minimum performance
  • General counter-productive behaviours
  • Workplace aggression
  • On-the-job substance abuse
  • Tardiness
  • Absenteeism
<table>
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<th>Dimension</th>
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<tr>
<td>Creativity</td>
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<td>General citizenship behavior</td>
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<td>Injury rate</td>
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<td>General counter-productivity</td>
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<td>Absenteeism</td>
<td>✓/X</td>
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Summary of age and job performance

1. On average, age is a weak predictor of job performance.
2. Age has inverted U shape relationship with job performance in less cognitively demanding jobs.
3. In higher complexity jobs, older workers may perform better than younger workers.
4. Exception: this is true if relevant knowledge base does not change rapidly.

BUT

5. Much variation between individuals...
Match individuals to job

• Can’t lump together workers based on, e.g., age
• Must establish clear criteria for evaluating and comparing qualified candidate when hiring
• Identify KSA (knowledge, skills, abilities) to do the job
• E.g., evaluate shift tolerance
Caution

• Much of what’s ‘known’ is based on cross-sectional studies, i.e. ‘survivors’

• Greater variation in health at older ages than at younger ones
What else can/should employers do - 1

• Create part-time / flexible work, job-sharing, alternative schedules
• Accommodate disabilities / chronic diseases
• Set up comprehensive Return to Work programs
• Improve psycho-social conditions (e.g., job ‘enlargement’ to increase job control)
• Encourage / promote continuing education and training

Ctd ...
What else can/should employers do - 2

- Create culture of respect for older workers
- Show younger managers how to deal with older subordinates
- Help older workers maintain autonomy, adapt jobs to their physical and mental abilities
- Health promotion
- Support for transition to retirement
Identify jobs that people leave early
What career advice will prevent early retirement, unemployment at older ages
What general lessons can be learned
Possible content of wellness programs for older workers

- Degenerative arthritis
- Sleep disorders
- Hypertension
- Glucose intolerance
- Screening for certain diseases
- Hearing and visual loss
- Abuse and bullying of older adults
- Vaccines
- Caregiver stress

Based on: Wallace and Fisher, 2009
What else can/should employers do - 3

RECRUIT, RETAIN, RETRAIN

(Harper & Marcus, 2006)
Canadian Longitudinal Study on Aging (CLSA)

Parminder Raina, McMaster University, Hamilton

Christina Wolfson, McGill University, Montreal

Susan Kirkland, Dalhousie University, Halifax
50,000 women and men aged 45 - 85 at baseline

n=20,000
Randomly selected within provinces

n=30,000
Randomly selected within 25-50 km of 11 sites

Questionnaire
• By telephone

Questionnaire
• In person, in home

Clinical/physical tests
Blood, urine (consent)
• At Data Collection Site

Interim contact, follow up every 3 years for 20 years

Data Linkage (consent)
Summary

• Populations are aging, workforces likely to get older
• (Some) Physical and mental declines occur with age
• Effects of declines can be mitigated with workplace changes
• Need to be aware of effects of aging to manage change in workforce
• Plan now for future
Contact

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Canadian Longitudinal Study on Aging:
www.clsa-elcv.ca