Funny, We Don’t Feel Old

America discovers a new stage of life – after middle age. The Age Boom: A Special Issue
People Surviving to Selected Ages According to Life Tables for the United States: 1900–1902 to 2000
United States: From pyramid to cube as the population ages

Population in millions by five-year age bracket; males on left, females on right.
Source: United Nations 2004 medium variant forecast
Men Per 100 Women

Figure 2  Number of men per 100 women by elderly age group: 1986. (From United States Senate Comm 1987)
Mexico and South Korea: Rapidly aging

Population in millions by five-year age bracket; males on left, females on right.

Source: United Nations 2004 medium variant forecast
Population Aged 65 and Over for Developed and Developing Countries by Age: 2000 to 2050

(In millions)

- **80 and over**
- **65 to 79**
- **Total 65 and over**

### Developed Countries

<table>
<thead>
<tr>
<th>Year</th>
<th>80 and over</th>
<th>65 to 79</th>
<th>Total 65 and over</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>171.1</td>
<td>133.7</td>
<td>238.2</td>
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<tr>
<td>2010</td>
<td>195.1</td>
<td>142.2</td>
<td>337.3</td>
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<tr>
<td>2020</td>
<td>238.2</td>
<td>173.4</td>
<td>411.6</td>
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<td>2030</td>
<td>284.6</td>
<td>202.7</td>
<td>487.3</td>
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<td>2040</td>
<td>312.7</td>
<td>207.4</td>
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<tr>
<td>2050</td>
<td>326.5</td>
<td>205.5</td>
<td>532.0</td>
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### Developing Countries

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<tr>
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<td>249.0</td>
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<td>283.4</td>
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<tr>
<td>2010</td>
<td>327.8</td>
<td>53.2</td>
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<td>2020</td>
<td>532.0</td>
<td>80.1</td>
<td>612.1</td>
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<td>2030</td>
<td>752.2</td>
<td>121.0</td>
<td>873.2</td>
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<td>2040</td>
<td>950.7</td>
<td>198.5</td>
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<td>2050</td>
<td>1,175.7</td>
<td>305.3</td>
<td>1,481.0</td>
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Positive Self-Perceptions of Aging Increase Longevity

- Positive self-perception – 5 items (1975)
- Subjects: 338 m 322 w (50-94) community dwelling
- Each point of + self-perception of aging ↓ risk of dying by 13%
- Most positive survived 22.5 years, most negative 15 years (~ 7.5 yrs)
- Not affected by self report loneliness or health status

Mean Number of Images Recalled

Amygdala activity

Mather, Canli, English, Whitfield, Wais, Ochsner, Gabrieli & Carstensen, Psychological Science, 2004
Amygdala Activity

Mather, Canli, English, Whitfield, Wais, Ochsner, Gabrieli & Carstensen
Psychological Science, 2004
And happier:
Longitudinal data

Personality and coping strategies - resilience
Self Confidence increases
Long term helping relationships with elders
Long term partnerships/marriages
Involvement with life and living
Active coping responses

(Vaillant)
Positive Self-Perceptions of Aging Increase Longevity

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High Self-Efficacy

• Challenge to master
• Requires effort
• Focus on problem solving
• Visualize success
• Calm, clear thinking
• Persistent
• Likely to succeed
Creativity

• Creative people continue to excel in their vocations even unto very old age (80s/90s)
• Examples: Verdi, Pablo Picasso, Henri Matisse, Arthur Rubenstei, Martha Graham, George Bernard Shaw, Georgia O’Keefe, Winston Churchill, Frank Lloyd Wright
Older, But Wiser
Wisdom

Expert knowledge about life and sound judgment in managing life’s complexities and uncertainties

(Baltus *Wisdom*)
BIOLOGY OF AGING
Telomeres and Telomerase

- Telomeres – protective DNA complexes at end of chromosome
- Telomerase – specialized cellular ribonucleoprotein reverse transcriptase
- By copying a short template sequence within its RNA, telomerase synthesizes the telomeric DNA strand towards the distal end of the chromosome—thus extending it.
Usual Aging Summary

- Sedentary lifestyle $\Rightarrow \downarrow \downarrow$ functional capacity equal to losses of aging per se
- Major contribution to development/ severity of chronic diseases is related to habitual levels of physical inactivity/activity
- Genetic factors and environmental insults-(i.e. pollution, chemicals, and infectious agents) play some role

Adapted from Friedlander 2006 and Singh 2004
PROMOTION OF SUCCESSFUL AGING

(goal: slow rate of decline)

Function/Health

Years

Disability threshold

Optimal aging

Successful aging

‘Normal’ aging

YEARS
SUCCESSFUL AGING

- Overall physical, mental, social, and spiritual well-being
- Minimize disability
- Increase longevity
- Decrease morbidity
- Improve physical and mental function
- Enhance quality of life
Centenarians

- Fastest growing segment of population, ≥ 85 second fastest
- Currently 40,000 (1/10,000)
- 3 million baby boomer estimate
- Markedly delay or escape age-related diseases (Heart, Stroke, Diabetes, Alzheimer’s)
- 90% independent at 90, 75% at 95
- Older you get, healthier you’ve been
Longevity Factors

• Apo E2 gene → increased longevity
• Apo E4 → increased Alzheimer’s risk

• Other genes
  angiotensin converting enzyme
  HLA - immune function variants
  plasminogen activator inhibitor 1

• Good genes ⇒ age-related disease in late 90s

• Child born naturally > 40 ⇒ 4x↑ likelihood live to 100

• Healthy lifestyle ⇒ live to 80s – lean, no tobacco, handle stress well, exercise, social contact
Promoting Healthy Aging through Lifestyle Changes
Walk Performance Study

• Subjects: 1491 men, 3075 women community dwelling, ages 70-79, no difficulty walking ¼ mi, 1 flight, or ADL
• Measurements: long distance corridor walk (400meters), and total performance time
• Outcomes: total mortality, cardiovascular disease, mobility limitation, mobility disability after ~ 5 years

Newman et al, JAMA, 2006, 2018-2026
# Walk Performance: Hazard Ratios

**Mortality**

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<tr>
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<td>1.38</td>
<td>1.17</td>
<td>1.00 p&lt;.001 (quartiles for women)</td>
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**Cardiovascular events**

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<td>1.29</td>
<td>1.20</td>
<td>1.00 p=.16 (quartiles for women)</td>
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**Mobility limitation**

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<tr>
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<td>1.52</td>
<td>1.86</td>
<td>1.00 p&lt;.001 (quartiles for women)</td>
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**Mobility disability**

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<tr>
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<td>1.64</td>
<td>1.95</td>
<td>1.00 p&lt;.001 (quartiles for women)</td>
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Newman et al, JAMA, 2006, 2018-2026
Person-Environment Interactions may be particularly important for Older Adults
Results from Cross-Sectional studies:

- **Higher pedometer** readings among older women living within walking distance (< 20 min. walk) of biking/walking trail, park, or department, discount, or hardware store.

Results from Prospective, Observational Studies:

- 5-yr survival rates higher in Older Japanese living closer to *walkable green spaces* (adjusting for SES, age, sex, marital status)
  

- 1-yr risk of developing functional loss in older Americans 2-3 times higher in neighborhoods with *excessive noise, inadequate lighting, heavy traffic, & poor access to public transportation*
