Knoebel Institute for Healthy Aging

Quality in Life, Wellness and Community

Dr. Lotta Granholm-Bentley, PhD/DDS
Executive Director
The silver “Tsunami”

- The age group over 75 increases the most
- Life span has increased
- Cure for some age-related conditions
- Huge lack of work force
- Technology, service, and infrastructure

Age group growth from 2010 to 2050

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Growth from 2010 to 2050 (%)</th>
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</thead>
<tbody>
<tr>
<td>75 or older</td>
<td>158%</td>
</tr>
<tr>
<td>60 to 75 years</td>
<td>66%</td>
</tr>
<tr>
<td>45 to 60 years</td>
<td>17%</td>
</tr>
<tr>
<td>30 to 45 years</td>
<td>34%</td>
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<tr>
<td>15 to 30 years</td>
<td>30%</td>
</tr>
<tr>
<td>younger than 15</td>
<td>35%</td>
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</tbody>
</table>
What is Aging?

1) Increase in mortality with age
2) Physiological changes/functional decline
3) Increased disease
4) ... but aging is also wisdom and experience

Ageism
10 Common Chronic Conditions for Adults 65+

Quick Facts

- 80% have at least 1 chronic condition
- 68% have 2 or more chronic conditions

Hypertension (High Blood Pressure) 58%
High Cholesterol 47%
Arthritis 31%
Ischemic Heart Disease (or Coronary Heart Disease) 29%
Diabetes 27%
Chronic Kidney Disease 18%
Heart Failure 14%
Depression 14%
Alzheimer’s Disease and Dementia 11%
Chronic Obstructive Pulmonary Disease 11%

Source: Centers for Medicare & Medicaid Services, Chronic Conditions Prevalence State/County Table: All Fee-for-Service Beneficiaries, 2015
Aggravating health conditions in the US

Obesity % total population vs. Alzheimer death per 100,000

- USA: 45.6, Rank: #2
- Sweden: 32.41, Rank: #5
- Japan: 4.23, Rank: #58
Workforce needs in aging

- Health care and social assistance
- Hospitality
- Transportation
- Technology
- Financial Industry
Technology development

- Aging in place technology watch
- [https://www.ageinplacetech.com](https://www.ageinplacetech.com)

**Tech-savvy Seniors Want Access to Care Services**

- 3.9 million reaching 65 years old in 2015
- 2-in-3 want technology to access care from home

**Top 5: What Do Seniors Want?**

- **Self-care tools** to manage health needs remotely
- **Wearables** to monitor symptoms and vitals
- **Online communities** for seeking advice from peers
- **Navigating health needs** with help from a patient navigator
- **Health record tools** to access outcome-related data (e.g., labs)

Accenture Survey 2014
Areas of tech development

• Robotics (social bots, health care, transportation)
• Transportation (autonomous vehicles, Uber, Lyft, etc.)
• Financial industry (Easier online banking, assessment of financial acuity, money management, etc.)

The Drive Me trial in Gothenburg
Intellisafe Autonomous Driving program
The first drivers will receive their cars in Dec. 2017. Volvo CEO Håkan Samuelsson

Waymo (Google) in Arizona

Huge innovation surge in autonomous cars
How can they help older adults?
Trends in technology and aging
Aging2.0 OPTIMIZE conference

1. Transforming aging with artificial intelligence
2. Thriving, not surviving
3. Technology and best practices positively affect the bottom line
4. Learn from international business development in aging
Transforming aging with AI

• support quality of life, active lives
• ‘tiny houses’ that support independent living (Minkas)
• new homes are powered by artificial intelligence (AI) and technology supporting wellness, engagement, and safety
• Amazon Alexa, virtual reality (VR), and IoT-enabled remote care (telehealth and telecare)
• Machine learning, robotics

From: Aging 2.0
Smart Home technology

• Home automation or **domotics** = a smart home
• Control and automation of lighting, heating, ventilation, air conditioning, and security
• Test homes are being created for SMARTHome™ research (USC)
Minka house

Dr. Bill Thomas: A compact, digitally native, modular, panelized house that is both affordable and easy to live in. It seemed right to call this model the “Minka” because that is the Japanese word for “a house for regular people.”

https://changingaging.org/blog/minka/
Thriving, not surviving

• Innovations addressing isolation, life purpose, food, healthcare quality, safety, and transportation

• Wearable devices, coupled with analytics, can improve passive communication between older adults and caregivers

• Changes in activities of daily living (ADLs), as tracked by CarePredict’s system

Social robot Ryan  
Dr. Mohammad Mahoor  
University of Denver
Technology positively affects the bottom line

• How can senior housing and communities put innovation into action today?
• How can developers make it easier for them to adopt innovation?
• create a positive impact on both the operations and financial health of senior living communities
• determine best practices, deliver care outcomes, manage risk in outcome-based risk-sharing care models, and retain staff
International business development

• Technology, practices, and outcomes from other countries
• Japanese home design
• Israel tech development support
• Canada: **create an asset out of the challenges presented by aging**
• Develop a social innovation lab and leverage community action for entrepreneurship and mentorship
• Create a work place that adjusts to aging-related issues, and increase work force for aging-related services
KIHA Strategic Goals

• The mission is to create and implement solutions for aging issues through multidisciplinary research, education and outreach.

• Interdisciplinary research programs

• Competency of current and future workforce

• Support business innovation

• Intergenerational programs
FOCUS AREAS - COLLABORATION

• Gerontechnology
• Movement and Aging
• Cognitive Impairment and Aging
• Financial Security and Aging
Financial acuity and dementia

- Financial abilities reach a peak at the age of 53
- Crystallized intelligence = Wisdom
- Fluid intelligence = Processing speed
- Reduced financial acuity earliest sign of dementia
- Law
- KIHA
- Social Work
- Business
- Financial industry

• Unique for DU

Dr. Eric Chess, Director
Concussion and dementia

• The link between brain injury and dementia controversial
• May lead to increased risk for Alzheimer’s disease
• Cohort of >200 Div. 1 DU athletes
• Hockey, Lacrosse, soccer
• **Collaboration:** Athletic Dep, Psychology, Engineering, KIHA, Chemistry
What are we hoping to do?

• Determine when safe to return to play
• Determine future risk for Alzheimer/CTE
• Find new technology for side-line diagnosis

Changes in:

➢ Dynamic Balance
➢ Impulse control
➢ Biomarkers for Alzheimer
Resources

• Aging2.0 OPTIMIZE, 14-15 November, annually attracts the top thinkers and doers in innovation and aging.
• Brings together academia, designers, developers, investors, and senior care executive visionaries to revolutionize the aging experience.

• Project X-ITE - http://www.projectxite.org/about-us/
• Interdisciplinary project allowing students and faculty the opportunity to explore innovation, technology, and entrepreneurship
If you want one year of prosperity, grow grain.
If you want 10 years of prosperity, grow trees.
If you want 100 years of prosperity, grow people.

_Ancient Chinese proverb_