

# Innovation Lecture IV: Geriatric Innovations

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# Introduction

- Every day in the US, 10,000 people turn 65 and by 2020 older adults will represent over 20% of the population. ( The Aging Readiness and Competitiveness Report).
- Rapid pace of change means opportunity and imperative for both public and private sector to harness the potential of the growing segment of society and address the welfare of older Americans.
- The **active-aging industry** in the U.S. — which includes
  - safety and smart-living technologies
  - health and remote care
  - wellness and fitness technologiesis expected to triple in the next three years, to nearly 30 billion.
- Those ages 50 and older in the U.S. generate 7.6 trillion in economic activity.
- That trend will grow as the number of older adults more than doubles by 2050, representing over 20% of the population.

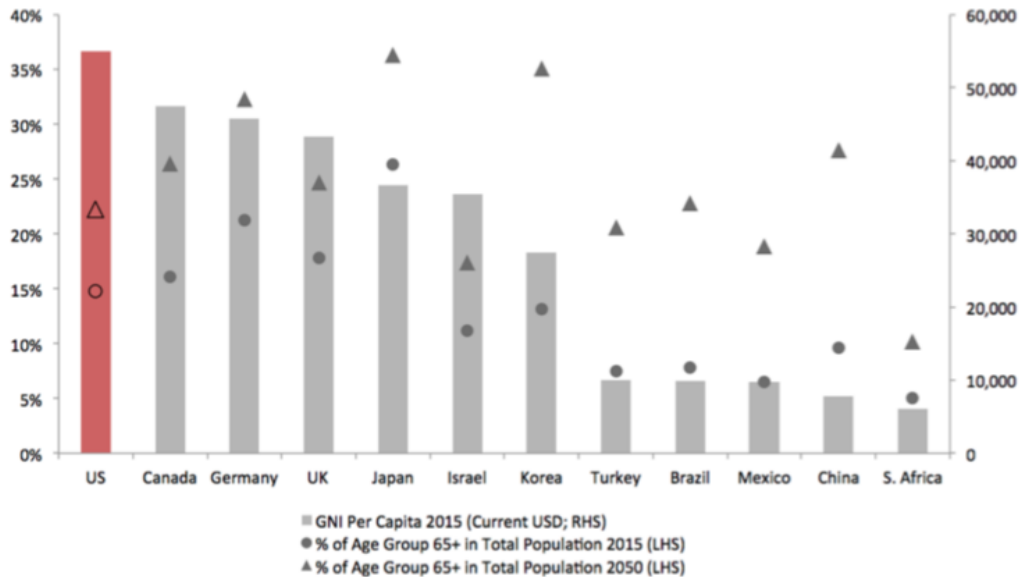


Figure 1: National Income Level and Percentage of Older Population. Sources: World Bank, United Nations, OECD

# Problems of Elderly Population

- Social Isolation/Lack of Social Connection

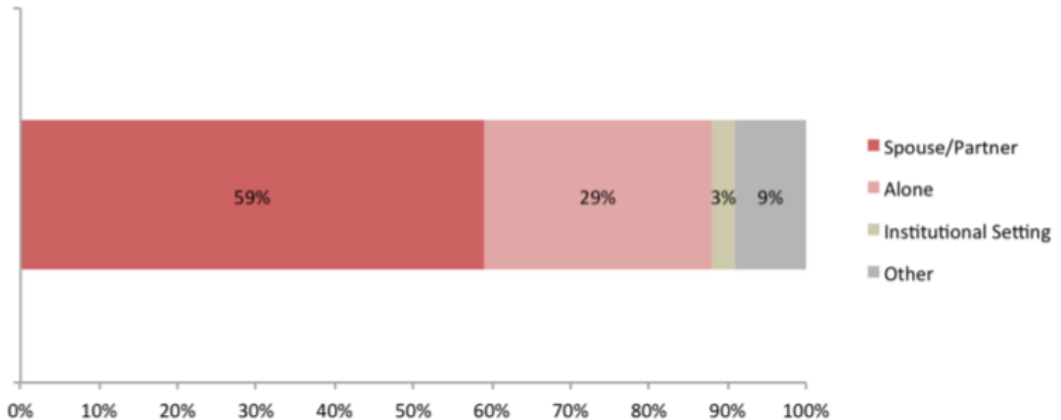


Figure 2: Living Arrangements of Adults 65+ in 2016. Source: U.S. Department of Health and Human Services

- Limited transportation options
- Lack of affordable housing
- Access to healthcare services

# Elderly care

- Successful health systems will be those that evolve quickly to ensure older patients:
  - are safe
  - are comfortable
  - have treatment and end-of-life experiences that matter to them/caregivers ([Allen et al., 2019](#)).
- Limited government intervention in the area of elderly care, as a result, advocacy organizations and NGOs are taking lead to combat it.
- Services provided are: Meals, Rides, Home visits and Care Services, Mitigate the adverse impacts of isolation.
- Health care expenditure on the elderly is the highest among all age groups.

# Meals on Wheels

- a network of 5,000 independently run local programs delivering daily meals to isolated and vulnerable older adults.
- Fulfilling a nutritional need, elderly feel less lonely having more human contact, improved mental health, lower incidence of depression and anxiety.
- Major programs target low-income and most vulnerable populations.
- Upper-income seniors are also at risk of isolation and loneliness.

# Technological Engagement

- Use of technologies to enhance quality of life of elderly people.
- Vast majority of older adults need assistance understanding and utilizing these technologies.

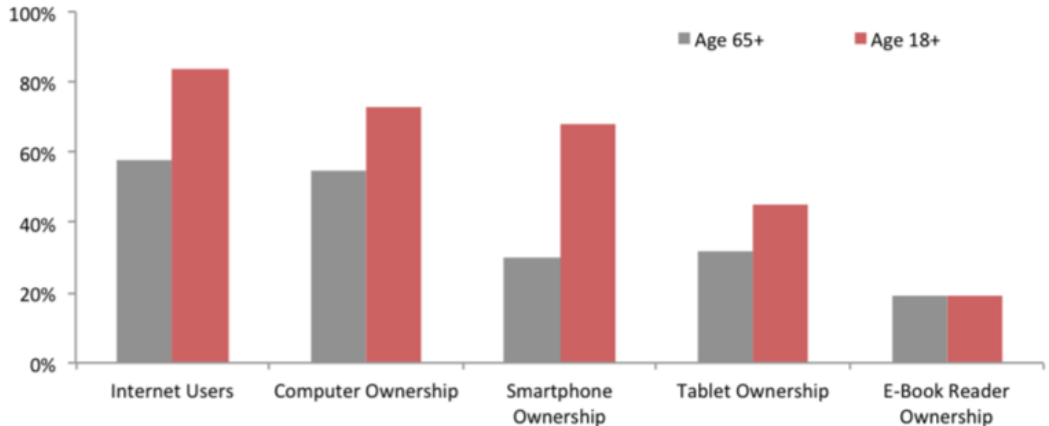


Figure 3: Adoption of Digital Technology (% of population in each group), 2015. Source: The Pew Research Center

# Healthcare and Wellness

- Go4Life Campaign. Launched by National Institute of Health in 2011.
- The exercise and physical- activity campaign fosters the integration of exercise and physical exercise into the lives of older adults.
- As of 2015, the Go4Life campaign had developed more than 250 public and private partners.
- Partners host Go4Life monthly activities – including endurance, strength, balance, and flexibility exercises.
- More than 41,000 people subscribe to the Go4Life e-mail updates.
- Public-private partnerships expand the reach of the services, not reliant on government funding hence less vulnerable to funding cuts.



# Long Term Care

- According to the Centers for Disease Control and Prevention, 60.5 percent of Americans 65 and older (26.1 million) self-reported to have at least one physical difficulty or complex activity limitation.
- It is estimated that 70 percent of adults turning 65 in 2016 will eventually need some form of long-term care and support services.
- Institutional Long Term Care causes significant burdens on the Health system of a nation.

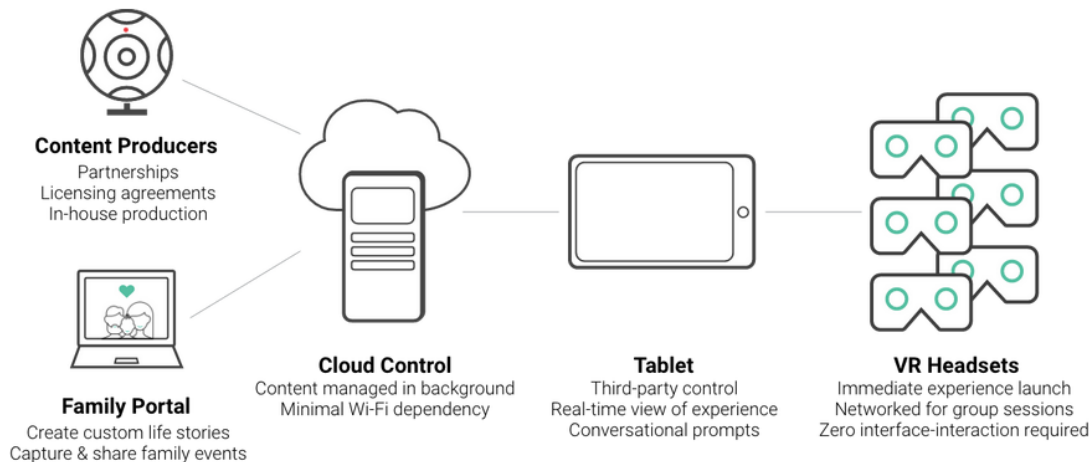
# Rendever

- Overcome social isolation through the power of virtual reality and shared experiences.
- Loneliness among seniors is a modern mental health epidemic.
- Research has shown that social isolation is as detrimental to health as smoking 15 cigarettes a day.
- Rendever is the winner of 35th The New England Innovation Awards - Healthy Living category.

“I saw the negative effects of social isolation take a toll on my own grandmother as she dealt with the aging process. When I first saw seniors react to virtual reality, I knew there was something powerful to dive into, and have spent the last three years pouring my heart into a product that I know my grandmother would be proud of.”

Kyle Rand  
CEO, Rendever

A standard Rendever system includes four headsets and a tablet, all powered by our proven infrastructure and content network.



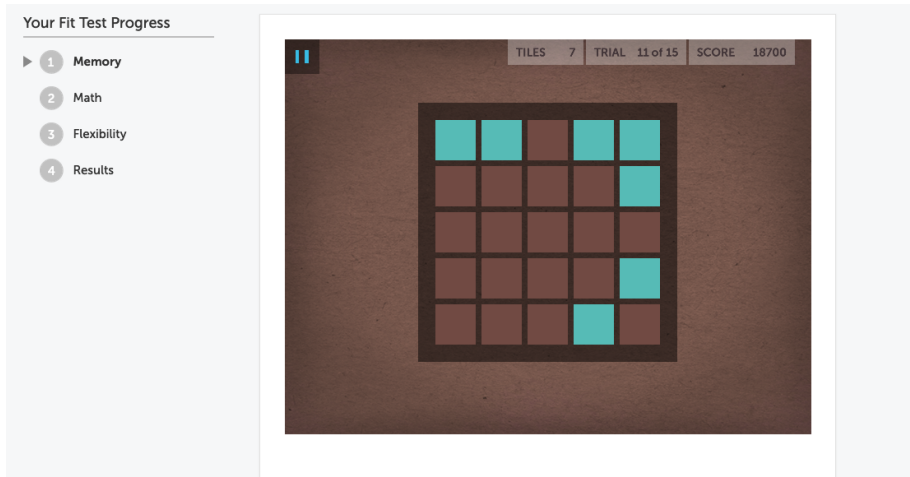


# Innovations

- [EatWell Video](#)
- The cognitive and various sensory impairments that arise with dementia can create problems with eating.
- ActiveProtective , now called TangoBelt is a hip protection wearable that improves safety and mobility.
- Automatically senses a serious hip-impact fall and deploys airbags to provide physical protection and reduce impact force.
- Sends digital alerts to caregivers for fall notification and as well as other interventions to keep the user safe.
- Gathers mobility data and sync with the proprietary app to measure and display balance and activity metrics.
- [TangoBelt Video](#)
- Health-e-Chair to monitor and measure physiological parameters such as ECG, blood pressure, weight, temperature, auscultation of heart and lung sounds, blood oxygen saturation, motion and reflex response time.

# Innovations contd.

- Lumosity: forgetfulness is a common complaint among many people, especially as we get older.
- Lumosity is an app, designed by neuroscientists.
- Helps users train their cognitive abilities.
- Seniors can exercise and sharpen skills that they use every day, such as memory, attention, flexibility, speed and problem solving.



# More Examples

- Red Button Alarms: By pressing the red button, which is worn around the wrist or neck, seniors in need are immediately connected to the specific organisation responsible for the red button alarm system.
- Example: VitalCall is Australia's leading provider of 24 hours a day, 7 day a week personal emergency response alarms.



**EVE 3G Personal Emergency Response System**



**Pearl Medical Pendant**



**Pearl Wrist Watch Pendant**

# Fall-Detection Pendant



**VitalCALL Fall Detection  
Pendant**

- Detects a significant impact fall, subsequent impact, and a period of no movement.
- Ideal for high-risk older adults and is water-proof, can be worn during shower.
- More details [here](#).



# Indian Scenario

- Dramatic demographic transition in the past 50 years, almost tripling of the population over the age of 60 years ([Government of India, 2011](#)).
- Proportion of Indians aged 60 and older will rise from 7.5% in 2010 to 11.1% in 2025 (United Nations Department of Economic and Social Affairs [UNDESA], 2008) ([UNDESA, 2008](#)).
- It is a small percentage point but remarkable increase in absolute terms.
- The number of elderly in India is projected to reach 158.7 million in 2025 ([UNDESA, 2008](#)), and is expected, by 2050, to surpass the population of children below 14 years ([Raju, 2006](#)).
- Of the 7.5% of the population who are elderly, two-thirds live in villages and nearly half are of poor socioeconomic status (SES) ([Lena et al., 2009](#)).
- Majority of elderly reside in rural areas, belong to low SES, and are dependent upon their families.
- information gathered from numerous surveys and regional and local studies point to the high prevalence of several risky behaviours, such as tobacco and alcohol use ([Goswami et al., 2005](#); [Gupta et al., 2005](#); [Mutharayappa and Bhat, 2008](#)), and physical inactivity ([Rastogi et al., 2004](#); [Vaz and Bharathi, 2004](#))



Figure 4: Burden of illness type among Indians. Source: (Dror et al., 2008)

# Medical and Socio-economic problems faced by the elderly

- Impairment of special sensory functions like vision and hearing.
- Decline in immunity.
- Higher prevalence of TB.
- Impaired physical mobility.
- High prevalence of smokers and alcoholics.
- Suggested readings: ([Ingle and Nath, 2008](#); [Mane, 2016](#))

A close-up portrait of Albert Einstein, showing his characteristic wild white hair and mustache. He is looking slightly to the right with a thoughtful expression, and his hands are clasped together in front of him.

**THE TRUE SIGN OF  
INTELLIGENCE IS  
NOT KNOWLEDGE  
BUT IMAGINATION**

ALBERT EINSTEIN | FEARLESSMOTIVATION.COM

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