



SOCIETY OF  
ACTUARIES®

2019 **ANNUAL  
MEETING**  
& EXHIBIT

October 27-30  
Toronto, Canada

## Session 042: Long Term Care Medical Discussion

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# Long Term Care Medical Discussion

Session 42

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# Agenda

- Introductions
- Background
- Mortality Trends
- Healthy Longevity
- Technology Impact

# Introduction

## Moderators

**Shawna Meyer, FSA, MAAA**

Chief Actuary, GE NALH

**Robert Eaton, FSA, MAAA**

Consulting Actuary, Milliman, Tampa, FL

## Presenters

**Julianne Callaway, FSA, ACAS, MAAA**

VP and Actuary, Strategic Research, RGA

**Afik Gal, MD**

Founder and GM US, Assured Allies

# Background

- SOA's LTC Medical Symposium
  - December 2018
- LTCMS2.0
  - December 2019
- Continuing the discussion

# Mortality Trends



# Questions

- How is older age mortality changing?
- What medical or pharmaceutical advances impact mortality?

# Medical Advances and Mortality

Mortality in the overall population seems to be very slowly improving with some unclear observations of worsening mortality trend and life expectancy decline (too early to tell)

Indication	Contribution to lost years	Expected YoY change in Life years lost
<b>Neoplasms</b>	38.05%	0.6%
<b>Cardiovascular diseases</b>	29.50%	-1.6%
Diabetes and kidney diseases	6.43%	0.9%
Digestive diseases	4.33%	0.3%
Neurological disorders	3.81%	1.7%

# Two Big Questions Matter

- Are we on the verge of having new miracle drugs?
  - A lot of talk about CRISPR, CAR-T and etc.
  - Very early stages..10+ years to mainstream (if all goes well)
  - Past miracle tools, are still not mainstream- long time to tame (e.g. Cancer immuno-modulation, stem cells)
  - Very few elderly patients in trials
  - New drugs are very very expensive...(affluent mortality)
- Is it going to be healthy longevity or disability ridden longevity...
  - Dementia is a rising cause-of-death
  - Obesity on the rise - but mortality from resulting IHD is decreasing

# Drug Development – Incremental Progress

- ~4100 clinical trials for top mortality causes (2020-2030 completion)
- Two types effect mortality... treatment (e.g. cancer) and prevention (obesity, cholesterol and etc.)
- ~50% are aimed at breast and lung cancers - High uptake is not expected initially
- ~20% are aimed to delay diabetes/stroke/heart disease - High uptake is expected initially

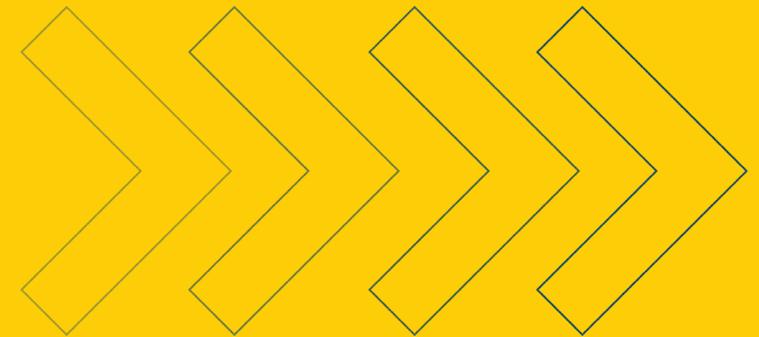
# Drug Pipelines 2010-2030

Indication	Phase1	Phase2	Phase3	Phase4	Total	Expected success
Atherosclerosis	6	14	9	16	<b>45</b>	3%
Hypertension	43	71	89	58	<b>262</b>	16%
Stroke	27	55	91	32	<b>207</b>	12%
MI	11	14	44	46	<b>115</b>	11%
Cardio Ischemic	3	17	24	43	<b>87</b>	9%
Breast Cancer	219	586	264	36	<b>1110</b>	32%
Prostate Cancer	100	328	162	20	<b>613</b>	19%
Colorectal Cancer	123	298	135	19	<b>575</b>	16%
Lung Cancer	246	633	238	27	<b>1147</b>	29%

# Additional Topics

- Advancements in detecting Alzheimer's
- Old age mortality and the trends to the disabled

# Healthy Longevity



# Questions

- What behaviors result in healthy longevity?
- What evidence do we have?
- What methods do we have to study this?

# Contributors to Healthy Longevity

Insights from multivariate models using a health related, mortality linked database



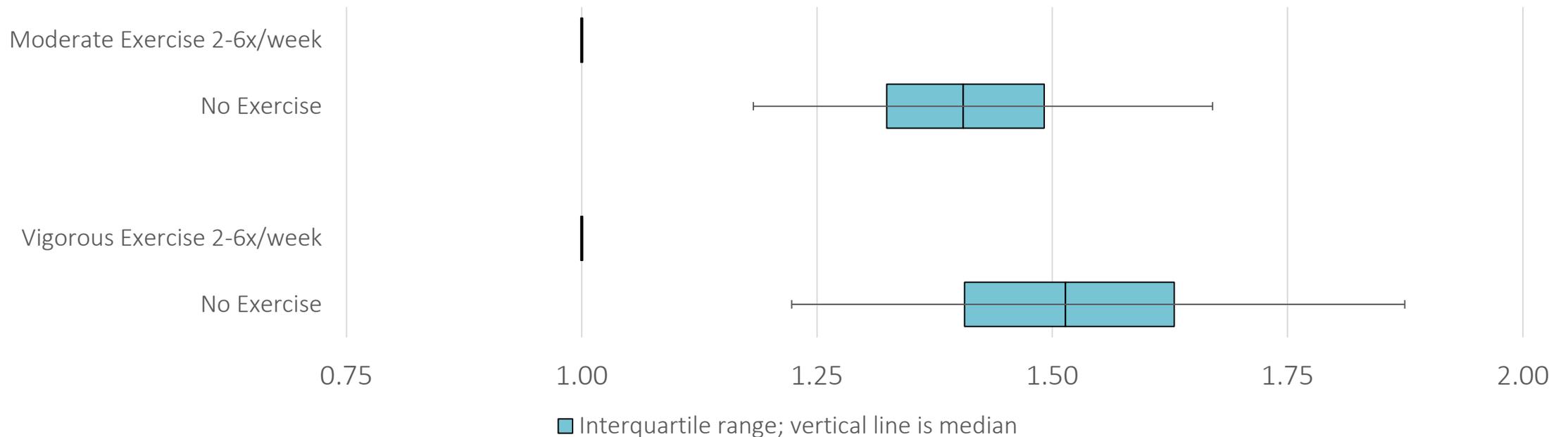
## National Health Interview Survey

NHIS is one of the nation's largest in-person household health surveys. It provides data for analyzing health trends and tracking progress toward achieving national health objectives.

# Exercise

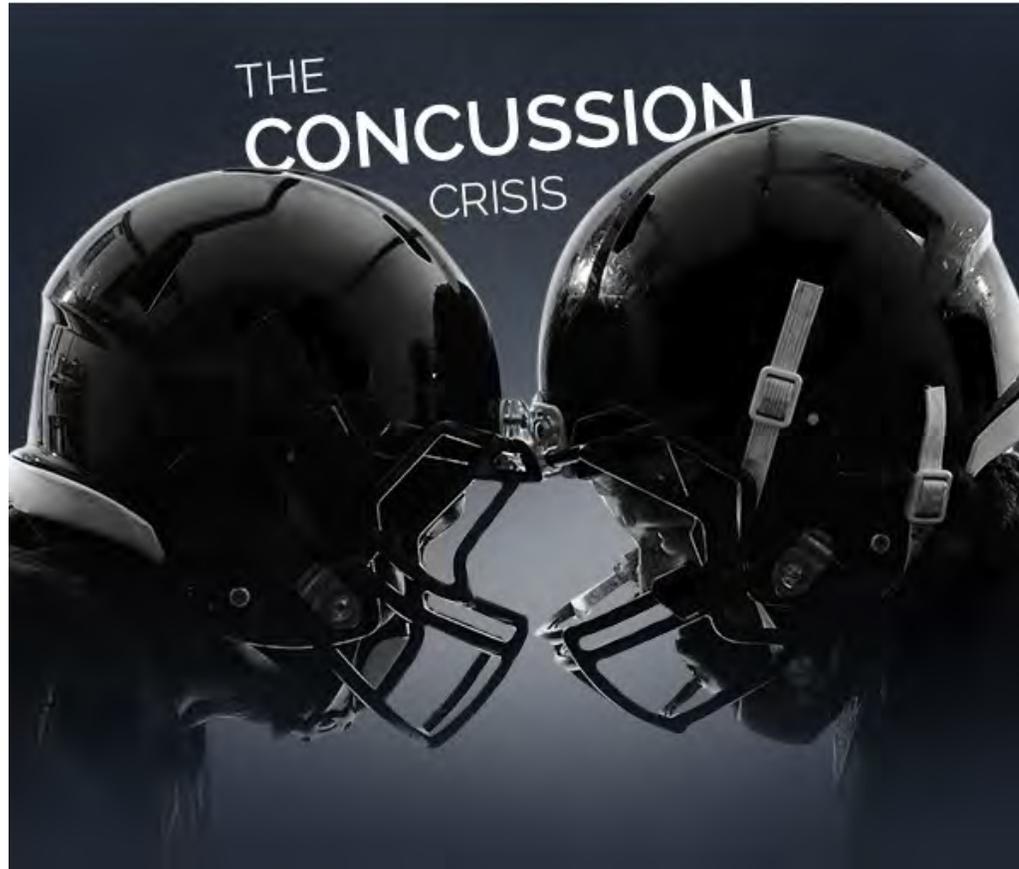
## Better experience for those who exercise, especially vigorous exercise

All Cause Mortality Hazard Ratios  
No Exercise vs 2-6 times per week, excluding those unable to exercise  
by Intensity Level, 65+



Multivariate model adjusts for: age, sex, smoking, disease history, health status, and income.

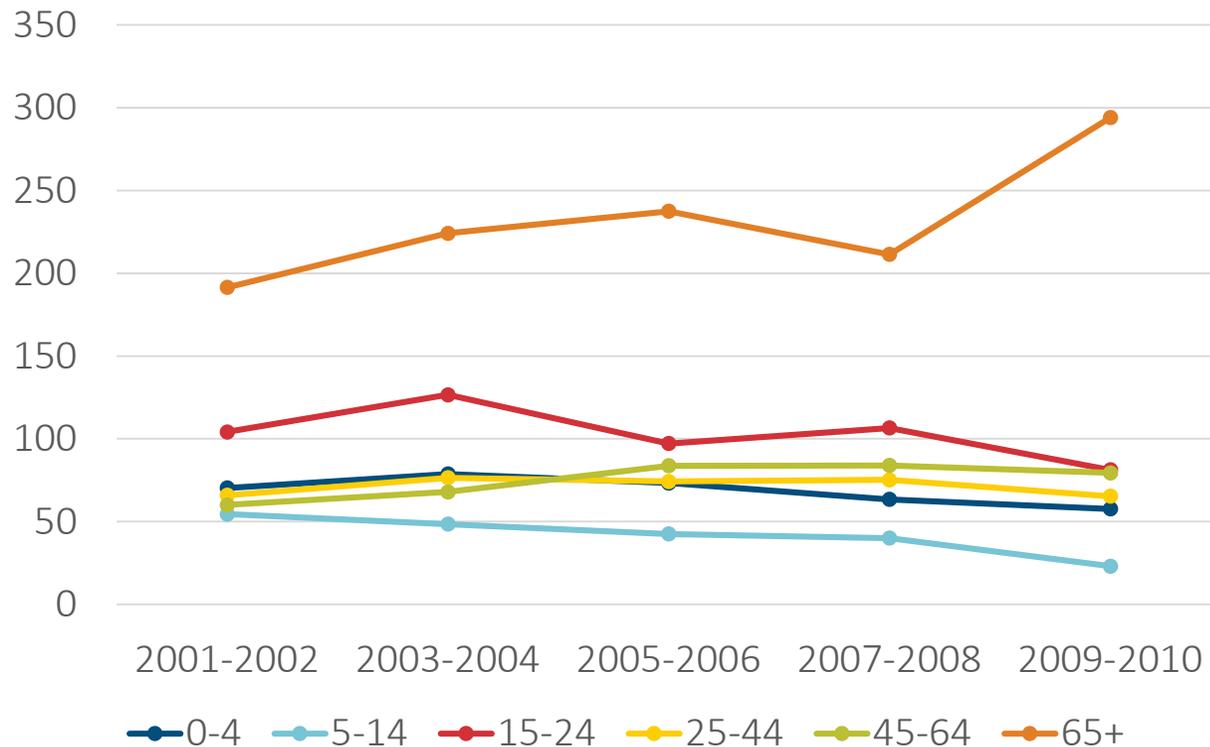
# Eldercare lessons from football



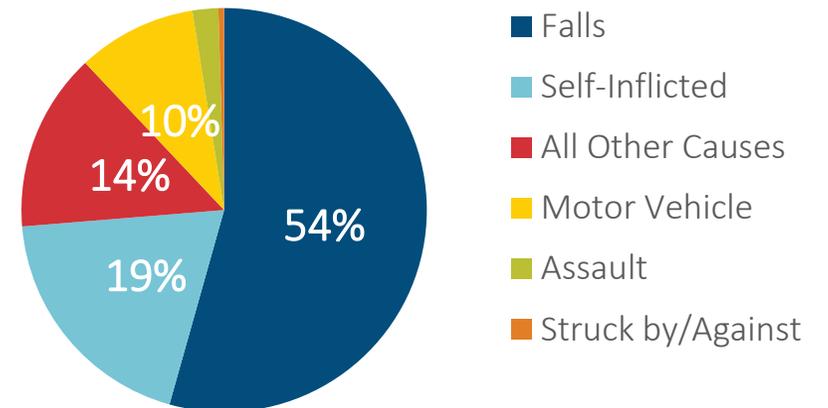
# Most Traumatic Brain Injuries in 65+ from Falls

## Highest rate of TBI for 65+ and increased 50% from 2001 - 2010

TBI-Related Hospitalization Rates per 100,000 by Age Group



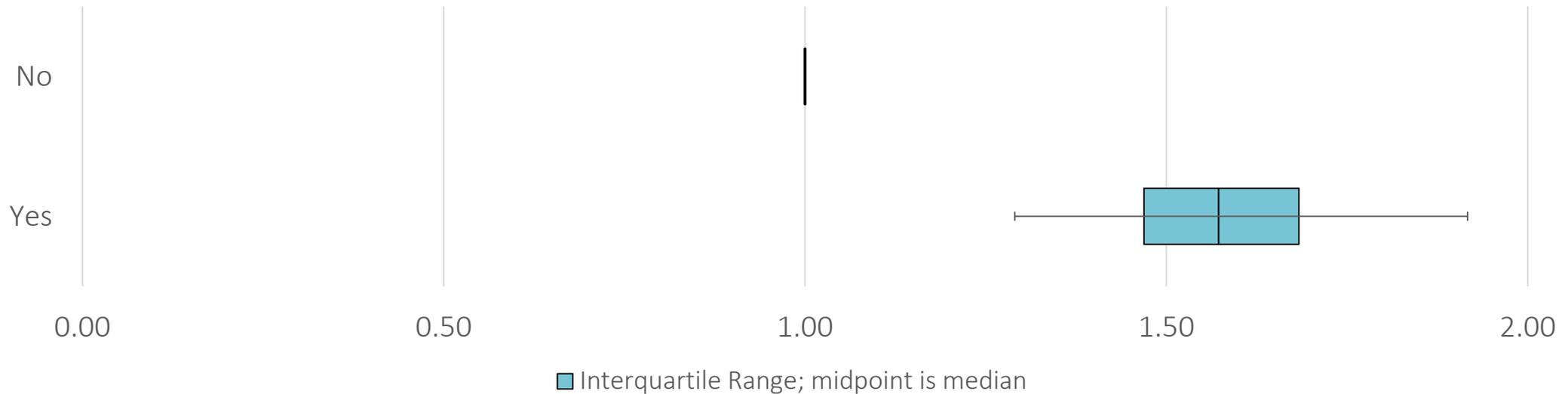
Causes of TBI-Related Deaths 65+



# Falls

## Recent falls increase all-cause mortality risk

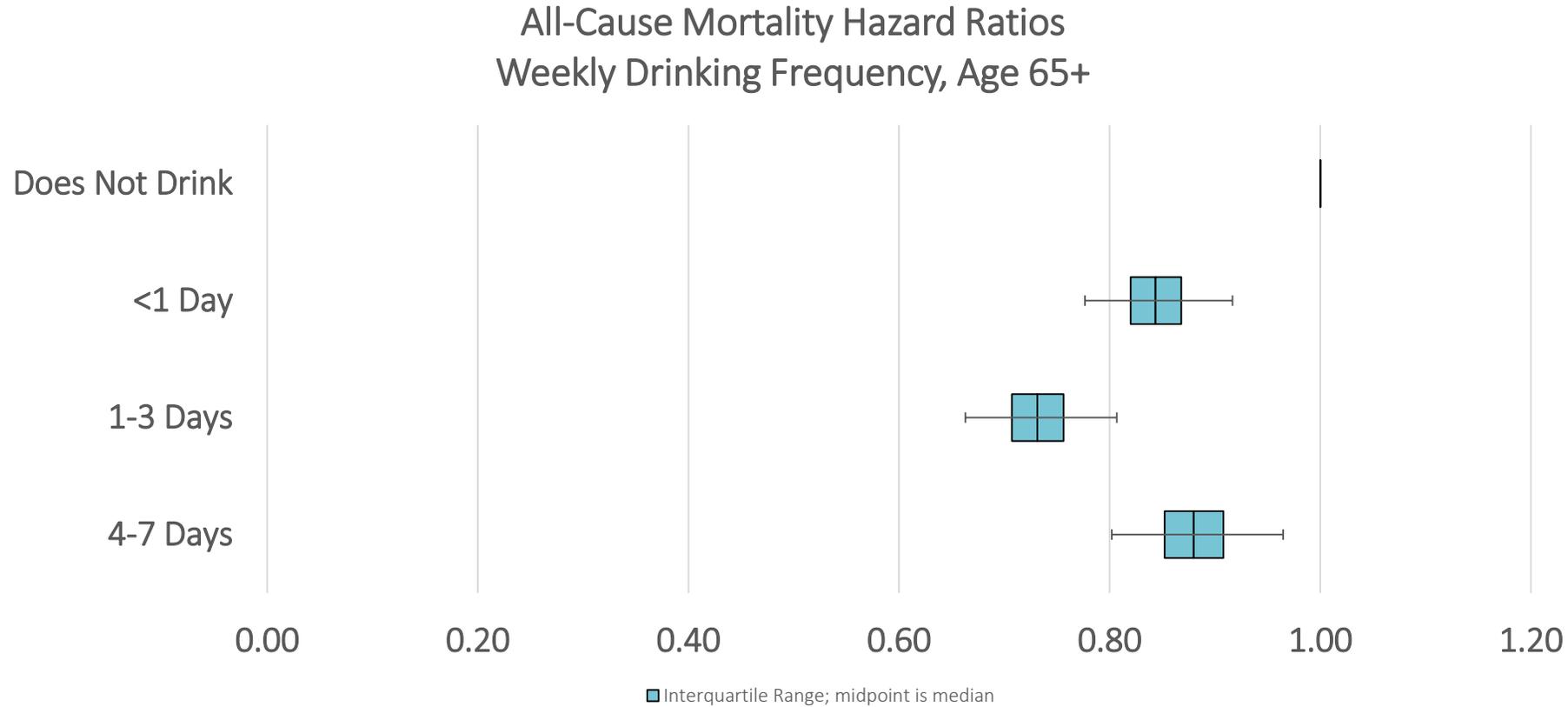
All Cause Mortality Hazard Ratios  
At Least 1 Fall in the Past 3 Months, 65+



Multivariate model adjusts for: age, sex, smoking, disease history, health status, and income.

# Alcohol

Drinking alcohol is associated with lower all-cause mortality

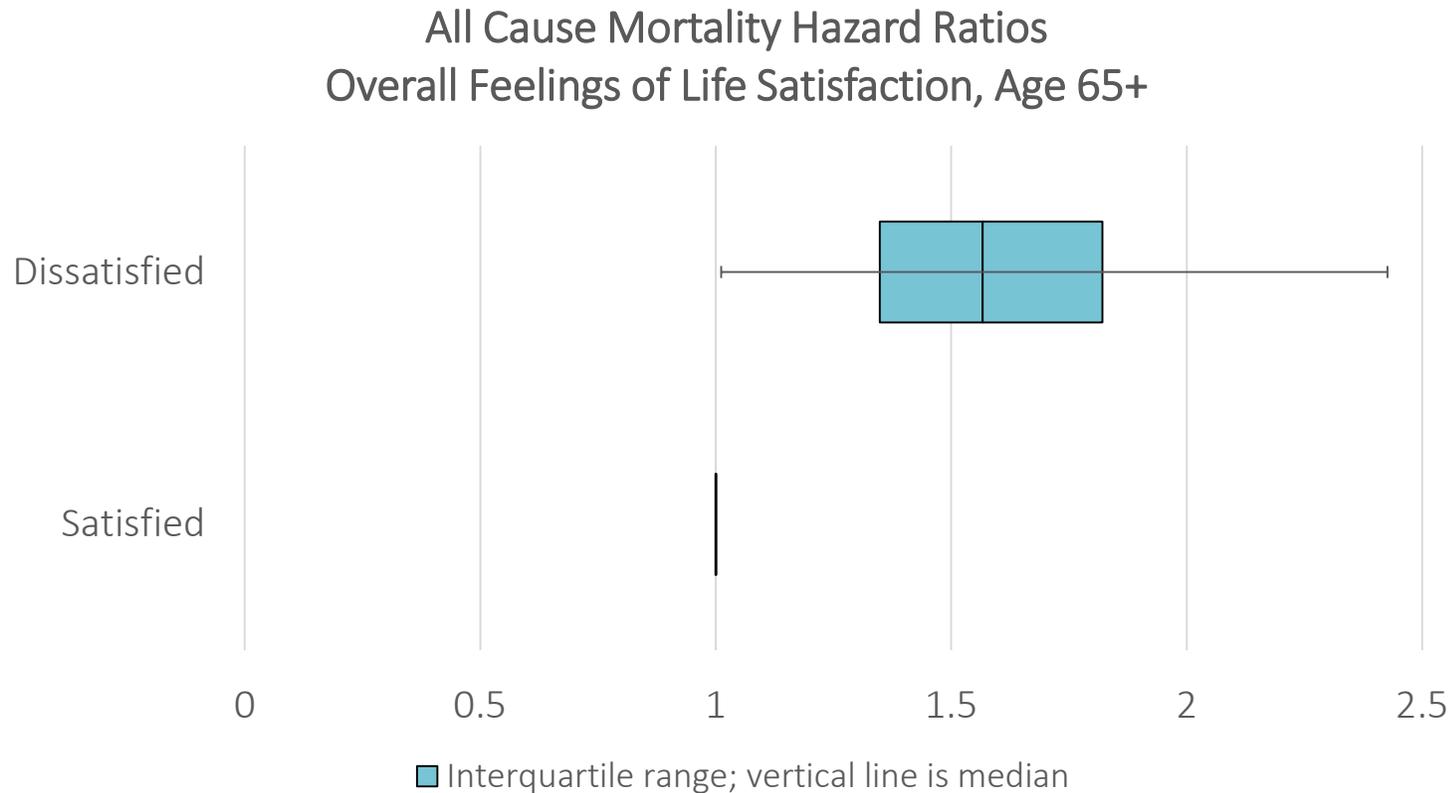


Multivariate model adjusts for: age, sex, smoking, disease history, health status, and income.



# Emotional Wellbeing

Higher all-cause mortality experience for older adults who are dissatisfied with their life



Multivariate model adjusts for: age, sex, smoking, disease history, health status, and income.

# Additional Topics

- How will the obesity epidemic impact future LTCI claims?
- How will a treatment (or demonstrated delay) of Alzheimer's impact the entire health system (medical and LTC insurance)?

# Prevention is the Only Way For Healthy Longevity

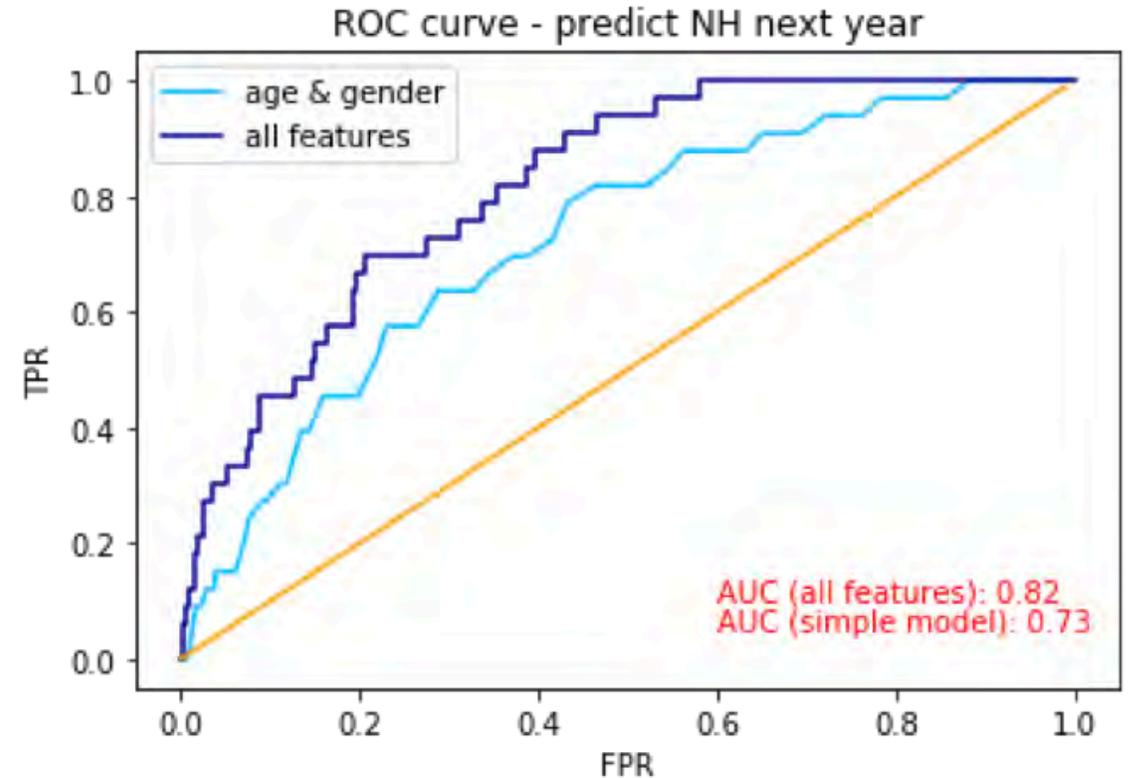
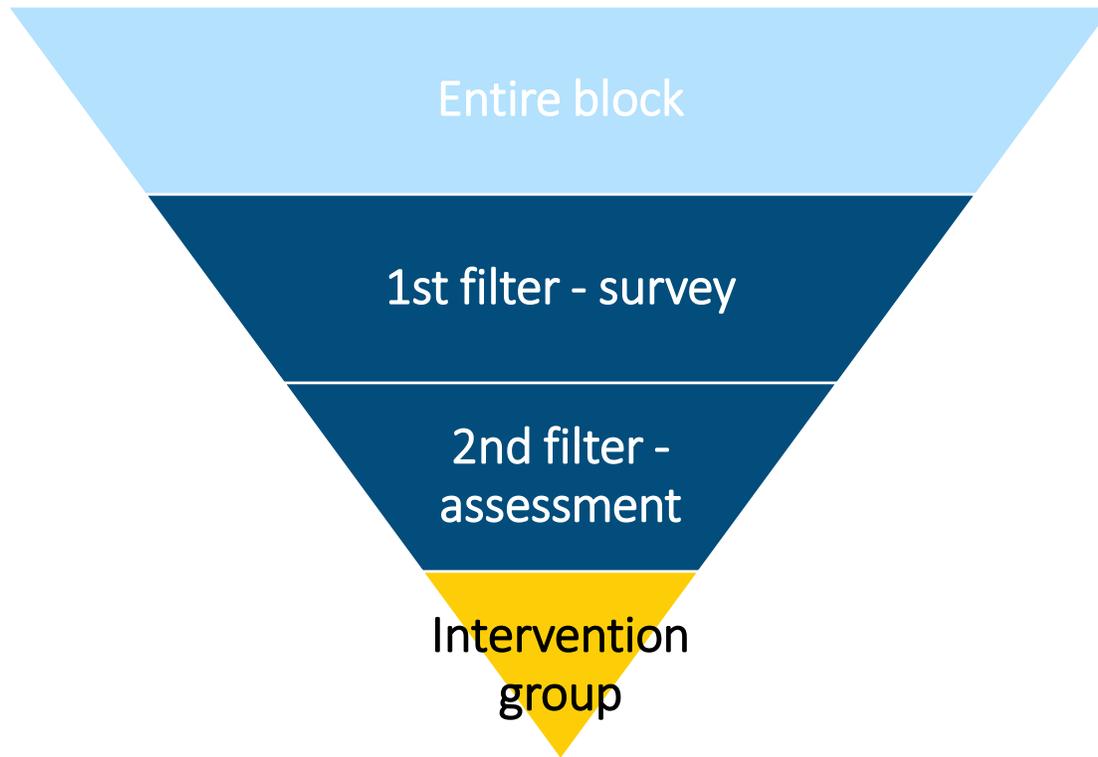
- Primary prevention for healthy longevity reduces LTC utilization
- Efficacious methods are hard to find due to a lot of noise
- We had to glean proven prevention methods from hundreds of papers

Reference	Review/ Meta-An	Intervention name	Intervention details	Location	Main inclusion/exclusion criteria	Group sizes + duration of follow-up	RCT / Observation al	Conclusion re nursing home placement/institution alization	Limitations	Grade
<a href="https://drive...WbUzONXOJuWaw">https://drive...WbUzONXOJuWaw</a>										
<b>Andren &amp; Elmstahl, 2008</b>	No	Psychological intervention	The intervention consisted of two components: education of the caregiver and provision of a support group. The education consisted of five weekly counseling sessions (2 hours). The caregivers were given information about the most common dementias (Alzheimer's disease, vascular dementia, frontal lobe dementia), including their course, consequences, behavioral changes and prognosis. A very practical session included information about available services, costs and legislation. The need to plan for respite care and nursing home placement was considered. The final sessions provided information about the treatment of dementia, and potential problems such as wandering, aggression and safety in the home. After the five educational sessions, the family caregivers could continue with a support group (1.5 hours) for three months. The support group met every other week, under the supervision of a counselor, and received practical and emotional support. The leader helped them discuss their needs as caregivers and to help them find the kinds of support they were looking for. The purpose of these groups was to cover more deeply the feelings and emotions which a person might experience in the daily care when living with (or having a close relationship with) a person with dementia. A printed counseling manual giving information about the intervention was distributed to the family caregivers. After the first year, follow-ups were conducted for every intervention group (16 groups) on one occasion and the caregivers had a fresh opportunity to talk about their situation and to get support. When the intervention was in progress, the family caregivers could get advice by telephoning a physician (every week), a nurse (every day) and a counselor (every week).	Sweden	informal (unpaid) caregivers of relatives with memory impairment, the latter having been diagnosed by a physician as having dementia and living in the community.	n=153,155, up to 5 year follow-up. Multivariate models shown only for adult children (n=91, 101)	RCT	Contradicting results in linear (days to nursing home) vs cox regression (survival until nursing home). Positive results in the linear regression, negative results in the cox regression.	Odd results in regression, filtration of adult children only for regression not explained	D
<b>Belle et al., 2006</b>	No	Psychological interventions	The intervention addressed caregiver depression, burden, self-care, and social support and care recipient problem behaviors through 12 in-home and telephone sessions over 6 months. Caregivers in the control group received 2 brief "check-in" telephone calls during the 6-month intervention.	5 US cities	Caregivers: Hispanic or Latino, white or Caucasian, or black or African-American race or ethnicity; age 21 years or older; living with or sharing cooking facilities with the care recipient; providing care for a relative with diagnosed Alzheimer disease or related disorders for at least 4 hours per day for at least the past 6 months; and reported distress associated with caregiving	642, randomised after stratification by race, 6 months follow-up	RCT	No effect on institutionalization	Short follow-up	D

Efficacious does not mean good ROI  
(common problem in healthcare)

Good ROI requires stratification!

# Predictive Analytics Makes Primary Prevention ROI Positive



# LTCl vs. Health Insurance Successes

- Success with healthcare endpoints does not guarantee success with LTCl endpoints (due to additional dimensions such as family caregivers, emotional psychological, irrationality)
- Time horizons between these points also are frequently different – short time efforts to prevent readmission vs. preventing LTCl usage
- Savings and costs for an individual (and ROI) can also significantly differ (LTC is between \$50K-\$100K/yr.. Healthcare has a much wider range)

# Example - Telemedicine/ Home Monitoring

- Recent research show that telemedicine MAY improve some end points in specific use cases:
  - Concerned family caregivers
  - Home hospice
- Very few negative effects have been explored – all of which could be negative for LTCI (e.g. loneliness, depression, over-medication)
- Telemedicine needs to mature before potential effects on LTCI could be projected

# Example - Medication Adherence Interventions

- Medication adherence is a good thing in disease management
- Interventions to improve it are mostly not successful ([Cochrane](#))
- The impact on LTCI policyholders is tricky
  - Dementia – no effect
  - Overmedication - negative effect
  - Stroke - effect will take years to realize
  - Osteoporosis – effect will take years

# Dementia

- The only drug (big maybe) for ALZ at the moment is Biogen's aducanumab – delays initial deterioration → delays age of entry to ALF,NH
- Dementia is a rising cause-of-death (will continue to rise...)
- Medical advances might be able to prevent other types of dementia
- Early detection without treatment is only good for research! (might backfire for LTCI usage)
- Prevention and ability to stop the disease will be LTCI game changers...

# Technology Solutions



# Questions

- What technological advances will assist us as we age?
  - 2020
  - 2030
- What are potential impacts to future LTC insurance claims?

# Eldercare Solutions



Managing  
Health



Aging in  
Place



Caregiver  
Support



Wealth  
Transfer

Insurance Industry Opportunities

# Digital Health Platforms

Tools to quantify risk and encourage healthy lifestyle behaviors



**Quealth is the industry-leading, clinically-validated HRA focused around the five leading lifestyle-driven illnesses in the world:**



Cardiovascular



Diabetes



Lung



Dementia



Cancer

It provides evidence-based advice using the latest behavioural change science, helping users to make lifestyle changes for a longer, healthier life.

Improvements in lifestyle related behaviors such as physical activity and smoking cessation result in an increase number of “Healthy Days”.

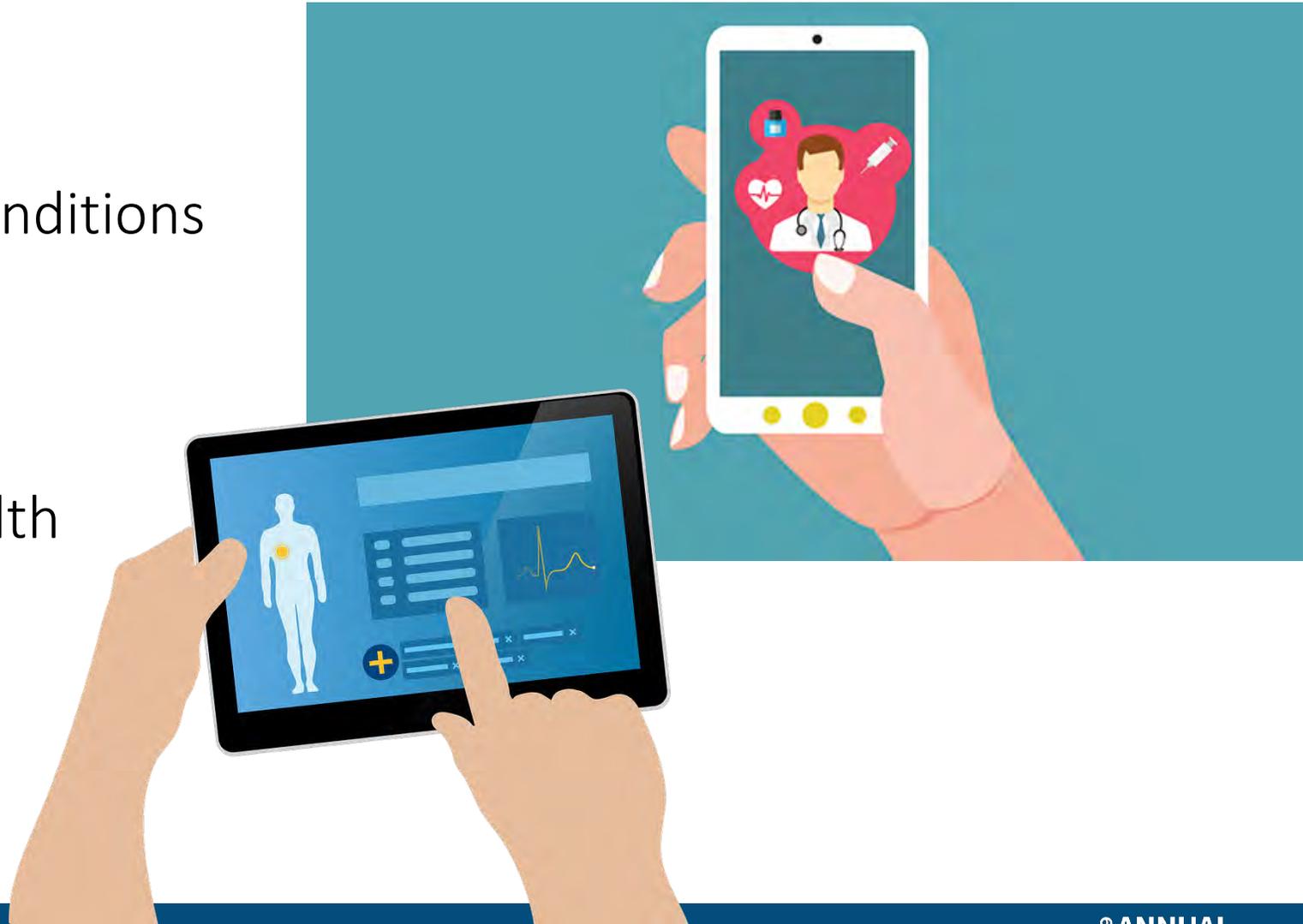


## Healthy days

Content is customised for each user boosting relevance, motivation and engagement.

# Video Telemedicine & mHealth

- Improved access to care
- Management of chronic conditions
- Reduced expense
- Behavioral and mental health support



# Insurance Value Added Services

- Digital caregiver's toolkit
- Online dashboard tracking medication, lab results, and health information
- Telemedicine service linked to smartphone, tablet or computer
- Digital wellness rewards program and fitness incentives



Only for Humana members

**A FUN WAY TO EARN  
REWARDS FOR MAKING  
HEALTHIER CHOICES**

Welcome to Go365<sup>®</sup> by Humana, the wellness program that rewards you for completing eligible healthy activities.



**IT'S PART OF YOUR HUMANA MEDICARE PLAN**

**There's no extra charge and you're already enrolled.**

Just sign in at [Humana.com](https://www.humana.com) and click on Go365. From there, you'll be able to view your Go365 dashboard, track your activities and manage your connected activity trackers and apps. Or you can request paper materials by calling the number on the back of your Humana Member ID card.



**EARN REWARDS YOU CAN REDEEM FOR GIFT CARDS**

**More healthy activities = more gift cards for you.**

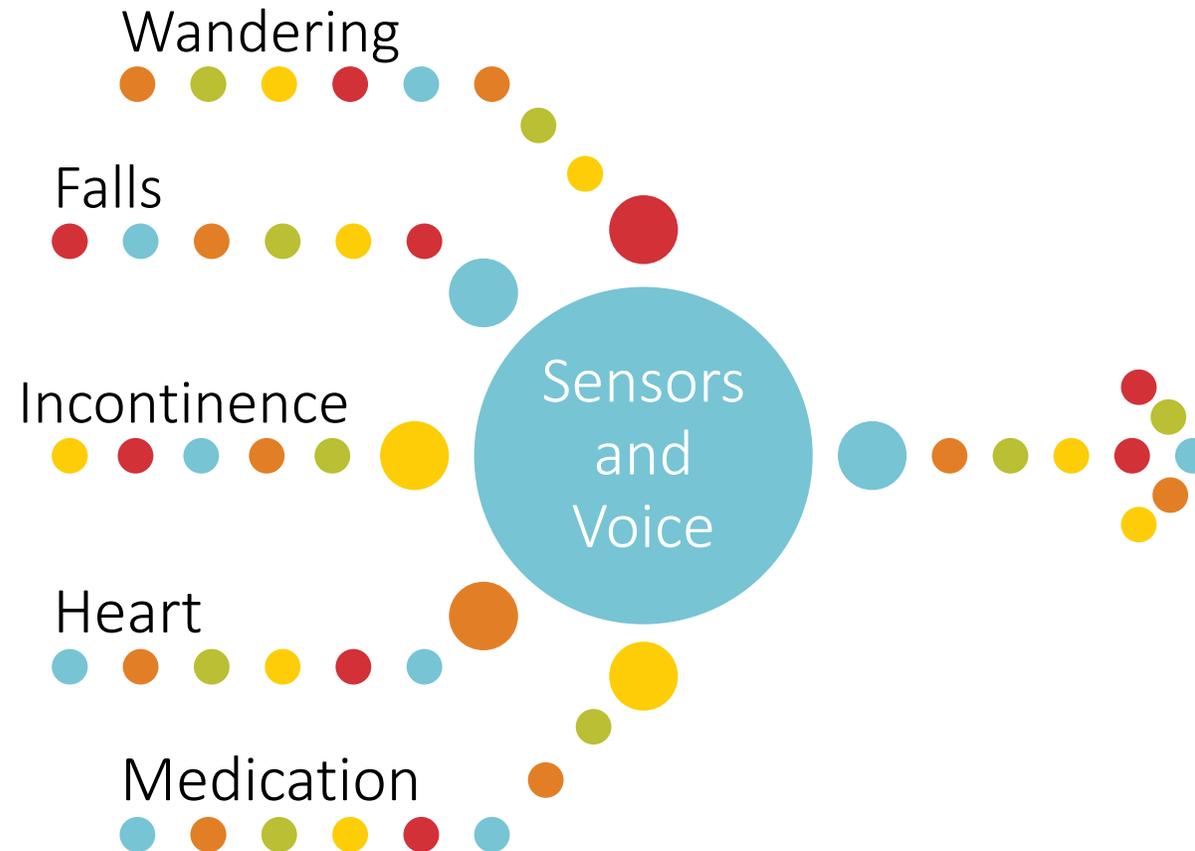
Complete healthy activities like walking, getting your Annual Wellness Exam, or volunteering, and you'll earn rewards you can redeem for gift cards to popular retailers.



[Humana.com](https://www.humana.com)

# Internet-of-Things Elder Tech Devices

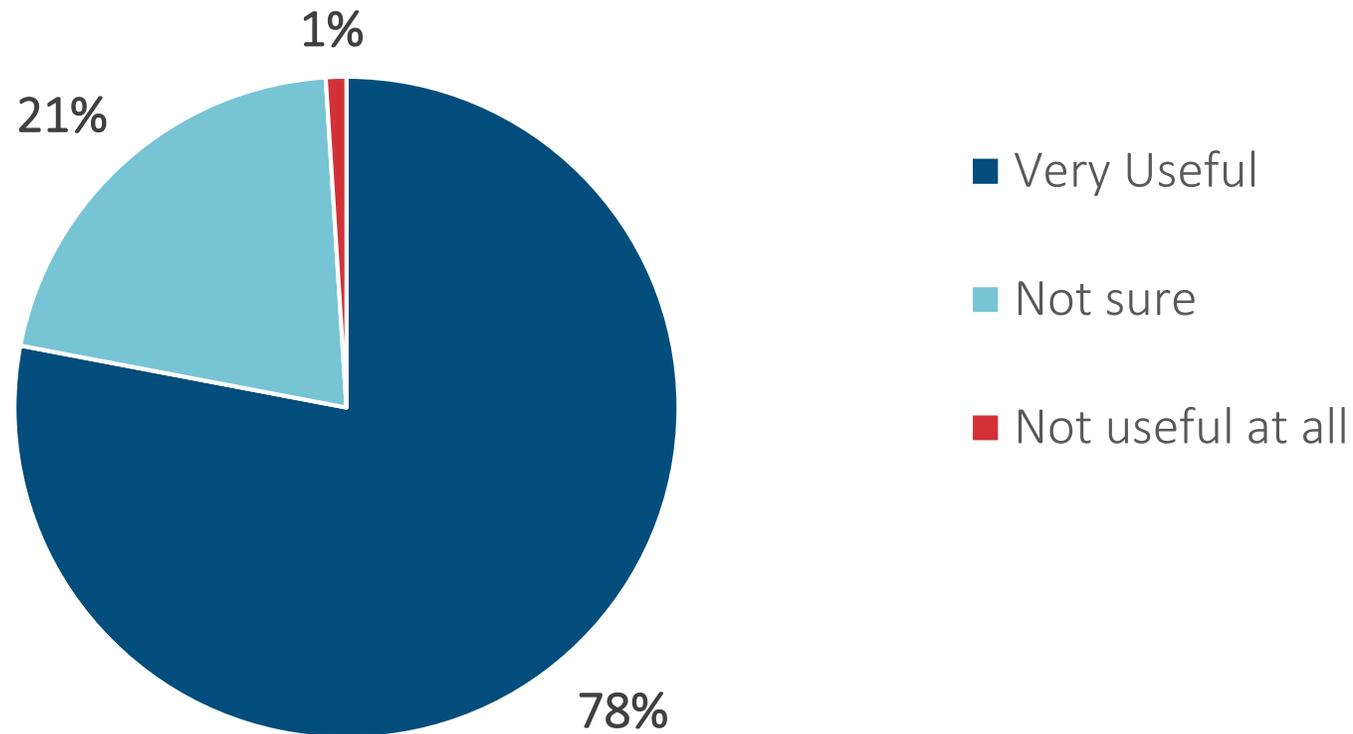
Technology designed specifically for older adults



# Opportunities for Insurers

**81% of connected homeowners welcome an insurer involved in managing their connected home**

How Useful are connected devices in helping sick/elderly



# Connected Home Solutions



Voice activated smart home devices



Easy control of the physical environment



Contact emergency services



Medication adherence alerts



Non-emergency medical advice



Daily calendar reminders



Software platform that integrates smart devices into a single responsive system.

Empowers older adults by enabling smarter living facilities.



Small plug and play device that collects information to assist older adults living alone.

The device records daily routines, provides alerts and communications that enable virtual care.

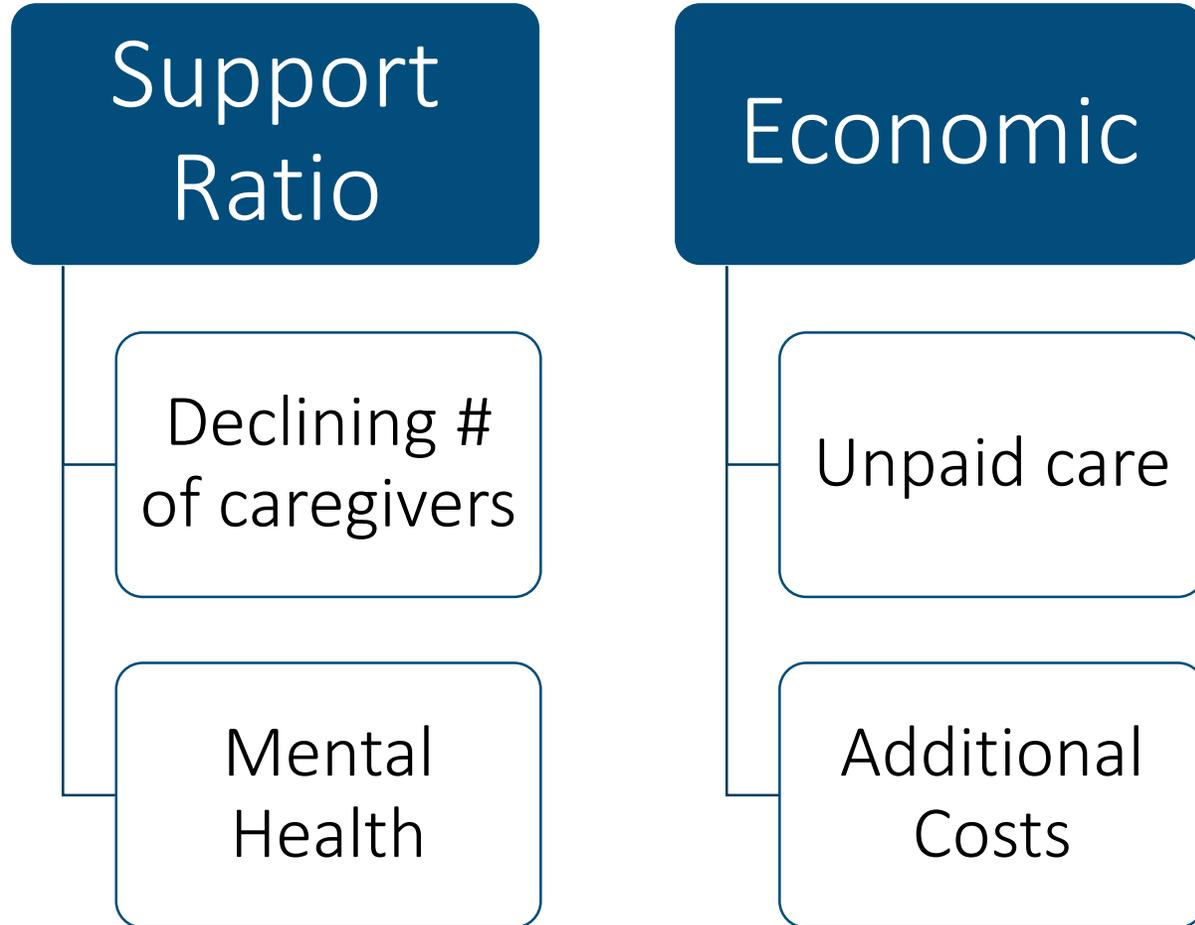
# The “sandwich” generation is overwhelmed

12% of Americans are caring for children and aging parents



# Caregiver Support

Caregiver challenges increase the likelihood an elder will move to a facility



Care management platform intended to improve the health of both the caregiver and the care receiver.

Identifies caregivers most at risk for burnout and provides resources and support.

# Retirement Planning Services

## Nationwide 'Care Concierge'

- 24-Hour Online and Telephone Access to a Network of Services Tailored For Retirees and their family
- Assistance with medical care research and locating health providers
- Help arranging care for parents or adult children
- Access to professional counselors
- Legal Assistance
- Virtual Travel Agent, Gift Ideas, and Event Booking
- Assistance with billing and claims
- Help for Adults 65+ navigating Medicare



## Nationwide® Care Concierge

Your guide to solving complex issues

Nationwide Care Concierge gives you access to Health Advocate, which provides guidance on many of the complex questions and issues that can come up in retirement, including:

 **Finding the right medical care**  
Locate leading health care providers, arrange treatments and tests, and expedite appointments

 **Providing licensed professional counselors**  
Receive confidential help on a wide range of issues, with services available in person, by phone and via secure video

 **Resolving medical insurance claims**  
Untangle medical bills and help resolve medical claims, billing issues and claim denials

 **Locating elder care services**  
Address elder care issues such as finding assisted living and adult day care providers for you and your eligible family members

 **Clarifying Medicare**  
Get assistance transitioning from traditional insurance to Medicare and clarifying complex Medicare plans

 **Offering a personal concierge service**  
Get help with travel and event bookings

 **Explaining complex medical conditions**  
Obtain information about your diagnosis and test results, and research and locate the latest treatments

 **Offering access to an attorney network**  
Get assistance answering minor legal questions and finding resources in your area for legal services

# End-of-life and Legacy Planning

Organization alleviates stress and improves generational loyalty

- Electronic Vault for financial documents
- Digital dashboards and management tools
- Access to advice, personalized guidance, and support for families/caregivers via website content, articles, and advisor networks.

Everplans	
Afternote	
LifeSite	
The Torch, LLC	
Legacy Shield	
Cake	
Yourefolio	

# Eldertech

Tools for insurers to help people live longer, healthier lives



# Additional Topics

- Robotics in caregiving facilities
- The role of smart devices in assisting those needing care in the home and early intervention and prevention
- Advancements in telemedicine
- Using predictive analytics to determine those at risk

# Cautious Optimism

- 1<sup>st</sup> win - improving functionality
  - Exo-skeletons
  - Rehab tech
- 2<sup>nd</sup> win –automation/monitoring (facilities -> home)
  - Automation robots
  - Home sensors for aging in place
- Cool ideas do not always work!
- We are really far from financial projections regarding this

# Exo-skeletons

- Home first
- Working models
- Not ready to scale yet
- Rapid progress
- Some solved use cases, some still early



# Rehab / Prevention of Acute Deterioration

- Flood of ideas and tech
- Solutions in the market
- Evidence is not there yet
- Business model will follow



© Reactive Robotics GmbH

# Facilities/home automation Robots

- Facilities first...home second (price)
- The building blocks are out there
- Commercial versions are not..
  - Business models are not there
  - UX issues not solved
  - Safety is not solved
  - Things do move quickly (the need is high)
- Hotels already pilot some delivery robots



# Home Sensors for Aging in Place

- Sensors today mostly detect motion/falls , some detect vitals
- Lots of academic work but products are quite rudimentary...
- Sensors alone do not generate value(except comfort)
  - Something needs to be done with the outputs
  - Early detection is only useful (e.g. ROI) if the harm can be prevented
    - Home hospitals
    - Very ill chronic patients (e.g. CHF)
  - Back to the healthcare-LTCL mismatch...
- Getting a “data dense” view of aging is the best use case today...

# Evidence Based Deployment of Tech in LTCI

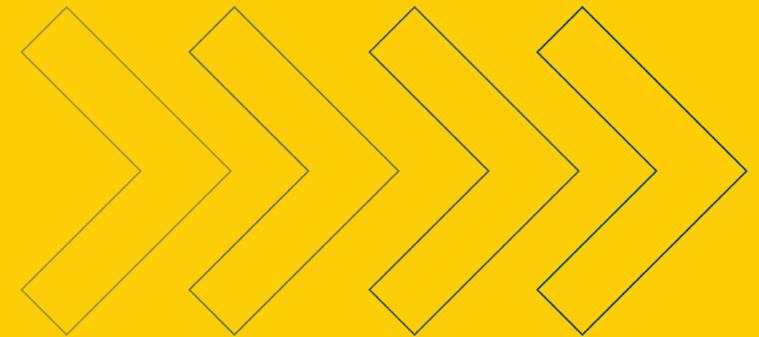
- Healthy skepticism
- It is really really easy to “fudge” efficacy
- Most of this technology does not have good quality evidence
- Risks in LTCI experimentations
  - Target risk (invest in picking the right people or have the vendor do it)
  - Intervention risk (either get a proof or pass the risk to the vendor)
- Successful deployment often requires iteration (a lot of it is about engagement and not just the technology)



# About Assured Allies

- Leverage advanced predictive models to find who to target
- Deploy proven methods that we worked hard to find
  - Pre claim
  - Comprehensive – caregiver, policyholder, functional, emotional, attachment
- Take full risk (i.e. intervention and target) – shared savings

# Wrap-up and questions



# Wrap-up

- Concluding remarks
- LTC Medical Symposium 2.0
  - Dementia / Alzheimer's
  - Technology

QUESTIONS



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