

A person wearing a blue jacket, a black smartwatch, and white earphones is shown from the chest down. Their hands are clasped in front of them. A solid red rectangle is positioned in the top right corner of the image. The background is a blurred outdoor setting.

Digital Health Transformation

WHY IT MATTERS!

Today's Purpose and Payoff

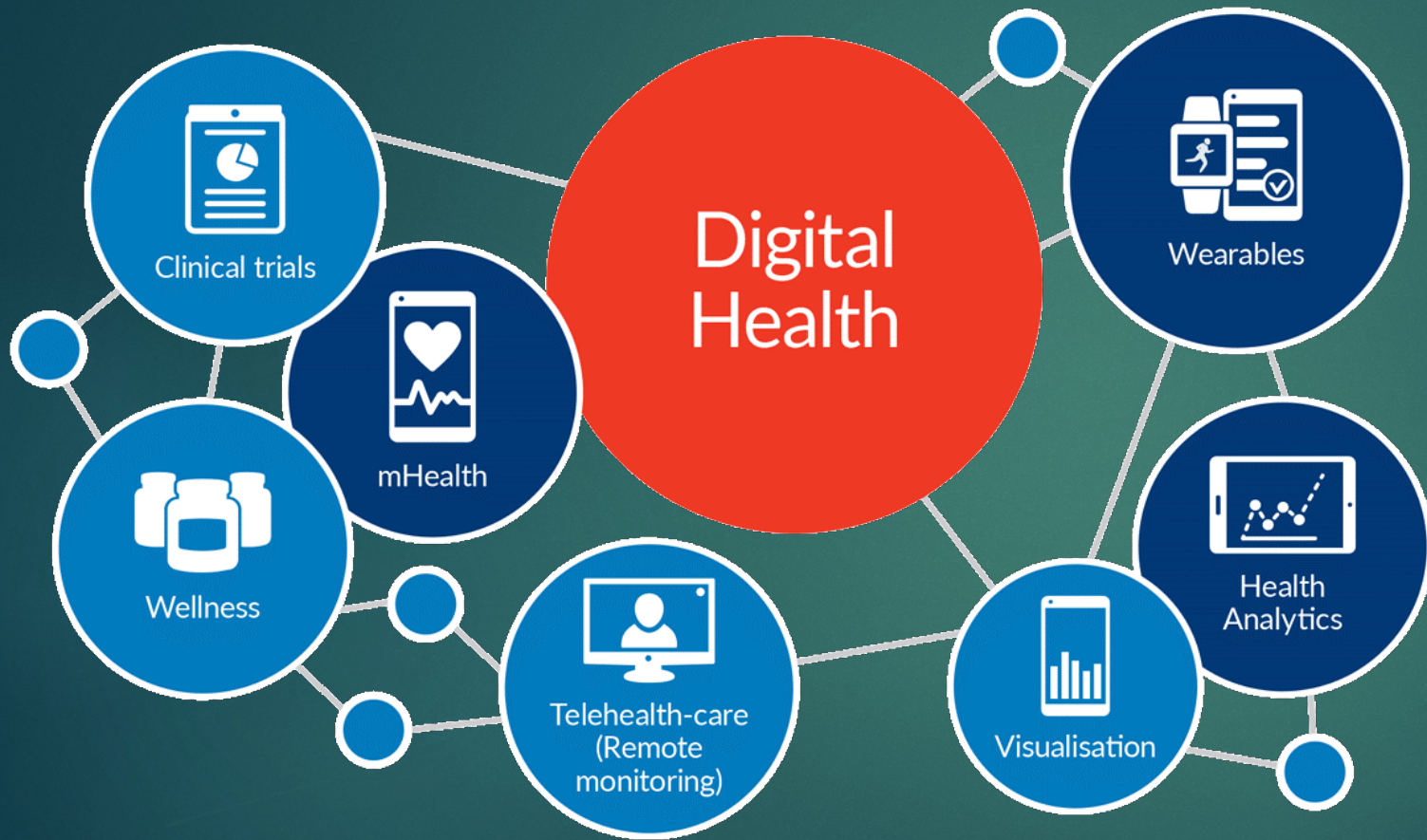
▶ **Purpose**

- ▶ Define “What is Digital Health”
- ▶ Share background on aging, healthcare, and wellness
- ▶ Brief History of technology in healthcare for the U.S.
- ▶ Learn when, and if, health technology can help seniors
- ▶ Demonstration of new healthcare technology for Seniors

▶ **Payoff**

- ▶ Better informed on the convergence of wellness and healthcare for Seniors

Digital Health - Wiki

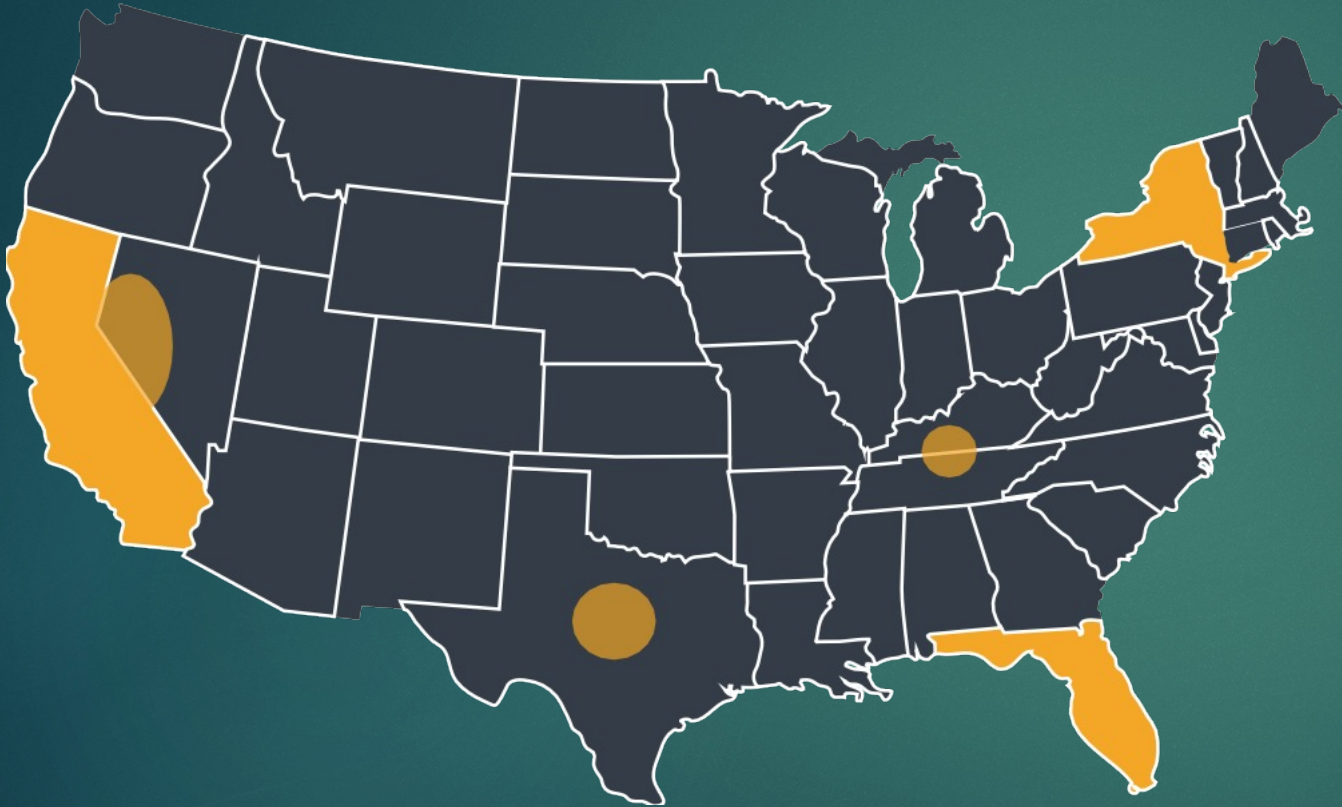


- **Digital health** is the convergence of digital technologies with health, healthcare, living, and society to enhance the efficiency of healthcare delivery and make medicines more personalized and precise.

Overview

- ▶ US population of 65+ will soon surpass the young population in majority.
- ▶ **Aging in place** is emerging as the best solution for both individuals and the government.
 - 89% of seniors wish to remain in their homes for as long as possible
 - It would allow savings of \$550k over 10 years for the individual and \$2-\$3 billion per year for the government.
- ▶ Aging in place solutions should cater the needs at the crossroads of smart home and digital health:
 - By 2020, the global **smart home market will be \$130 billion**. Almost 40% of households in the US will be equipped with smart home devices.

SOME KEY LOCATIONS IN THE U.S. WHERE THE ELDERLY LIVE



1 in 4 elderly Americans live in one of three states: **California, Florida, and New York.**

Illinois, Michigan, New Jersey, Ohio, Pennsylvania, and Texas —account for another one-quarter of Americans age 65 or older

80+ senior facilities are concentrated in Florida counties (Marion County & Palm Beach County)

Louisville, Kentucky is a very big player in long-term care, being one of the "headquarters in nursing home, rehabilitation, assisted living and home health administration".

THE CURRENT CARE SYSTEMS WILL ***NOT BE ABLE TO SUSTAIN*** THIS INCREASE DUE TO 3 KEY ISSUES 1) COST 2) ACCESS 3) DISCONNECT

COST

Being old is expensive

- For the government through the healthcare programs of Medicare and Medicaid
- For senior individuals and their families through out-of-pocket expenditures

ACCESS

The existing settings will not be able to absorb the increasing number of seniors and there will be a lack of care givers available

DISCONNECT

Seniors are both economically and emotionally burdened when they must leave their homes and are not allowed to maintain their preferred quality of life

THE 5 MAIN CARE SETTINGS FOR THE AGING POPULATION CAN BE BOTH VERY EXPENSIVE AND ARE ALMOST AT CAPACITY

ACCESS

Independent Living Community



Capacity : 245,000 units

Largest single provider:
Holiday Retirement with a
resident capacity of 40,440
and 315 retirement
communities

Assisted Living Facility



Capacity: 1,233,690 units

31,100 facilities

From 2007 to 2010, supply
has increased almost 18%

Residential Care Facility



Capacity: 851,400
residents

713,300 actual residents
22,200 facilities

Proportion of residential
care communities with for-
profit ownership: 78.4%

Continuing Care Communities



Capacity: 570,000
units

350,000 actual
residents 1,900
communities

Nursing Homes



Capacity: 1.7 Million residents
1.4 million actual residents
15,700 nursing homes

Proportion of nursing homes
with for-profit ownership:
68.2%

AGING IN THE PLACE IS THE IDEAL SOLUTION

AFFORDABLE

At an individual level, despite required remodeling costs, aging in place is significantly less expensive than senior care facilities

At a federal level, aging in place allows savings for both Medicaid and Medicare enabling savings of \$45K annually per participant, or **\$2-\$3 Billion total annually.**

ACCESSIBLE

Most elderly people can remain in the house they've always lived in

ACCEPTED

Seniors need a stable lifestyle.

89% of seniors wish to remain in their homes for as long as possible with the key reason being able to live under one's own rules



Can Health Technology Solve
Challenges of an Aging Population?

Benefits of Digital Health for Seniors



Aging in Place is Safer



Removes Transportation Hassles



Saves Money Due to Reduced Healthcare Costs.



Easy Monitoring of Chronic Conditions



Seniors Can Receive a Doctor's Opinion Quickly

We are on our own...

- ▶ We are entering a dramatic demographic transformation driven by advances in life expectancy and the baby boom.
- ▶ The core institutions of our society are **neither designed nor equipped** to support an aging population.
- ▶ Adaptation at the individual level will facilitate successful aging.

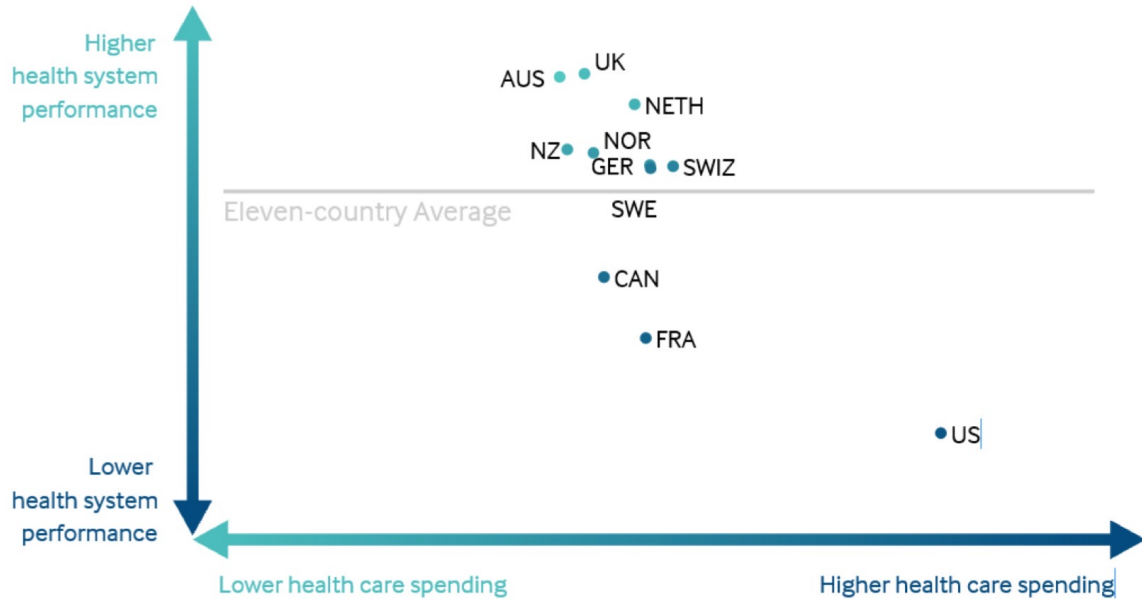
Compared to other countries...we are on our own...

Australia produces high quality health outcomes

“ Australia ranks highest on Administrative Efficiency and Health Care Outcomes, and is among the top-ranked countries on Care Process and Access ”

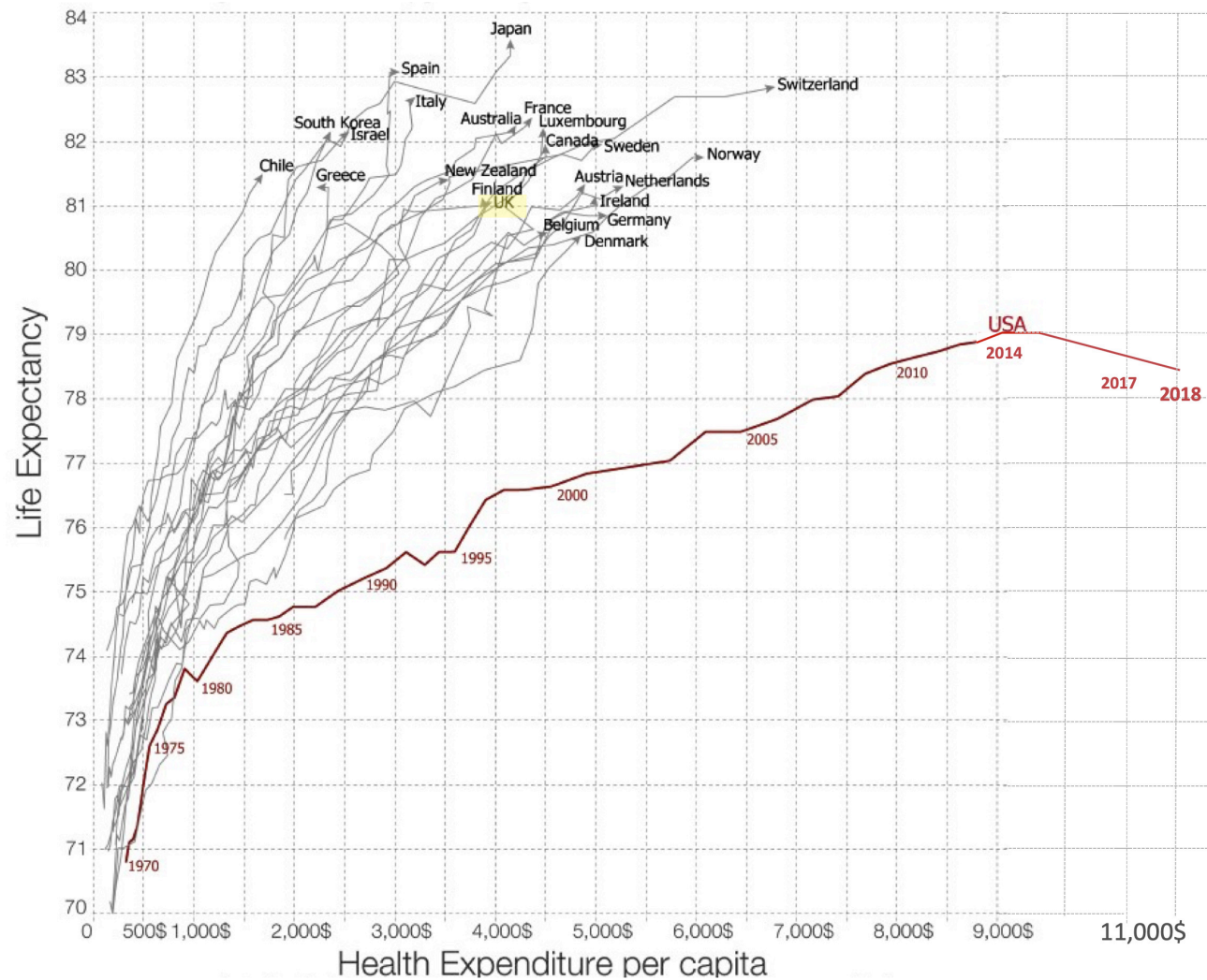
Commonwealth Fund (2017)

Exhibit 5. Health Care System Performance Compared to Spending



Note: Health care spending as a percent of GDP.

Source: Commonwealth Fund, 2017



Another
look...

“ YOU CAN'T MANAGE
WHAT YOU DON'T MEASURE.

- W. Edward Deming



Access, and understanding, your
own health data is key

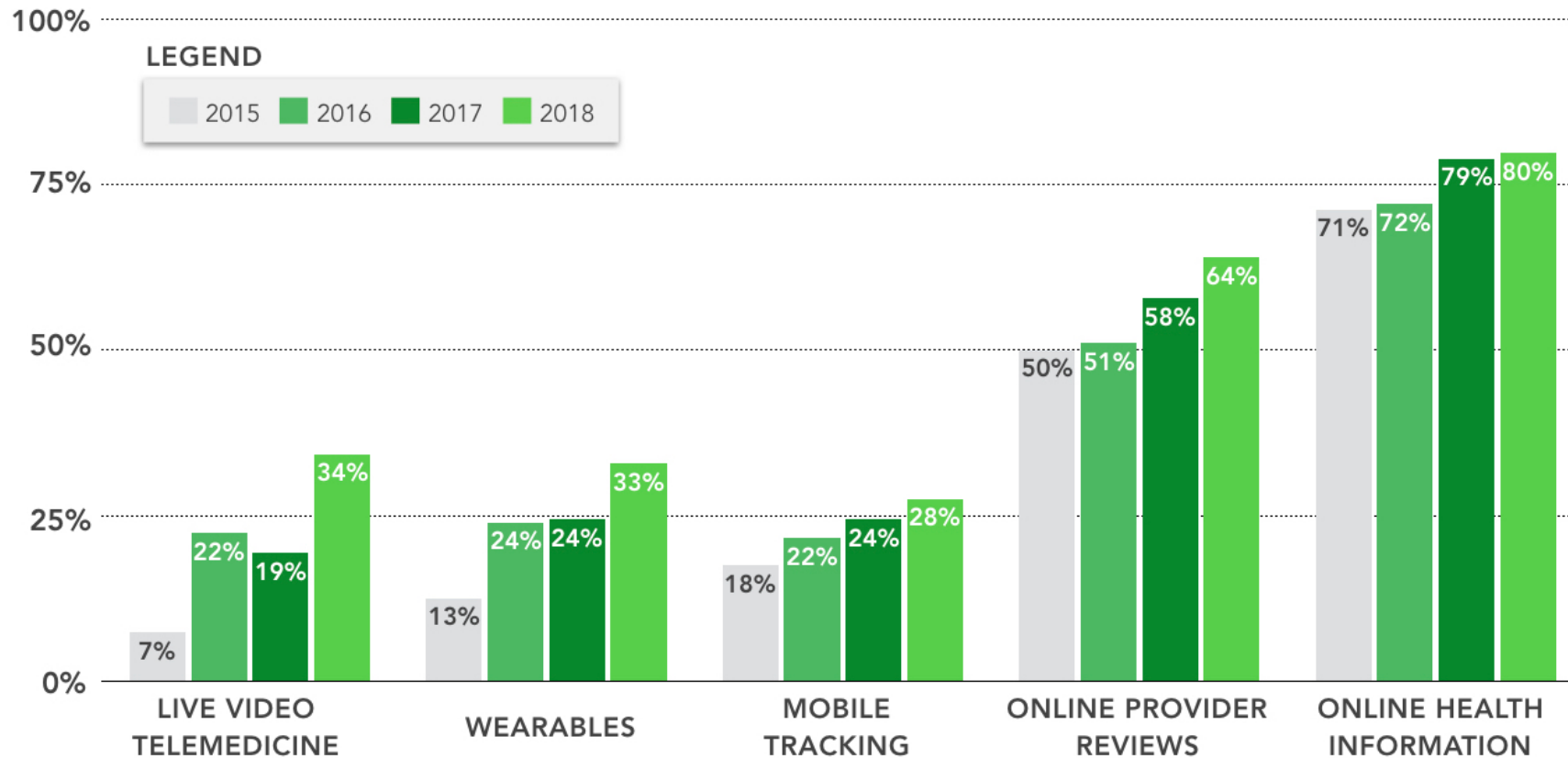
Promise of Connected Digital Health





ADOPTION OF DIGITAL HEALTH TOOLS

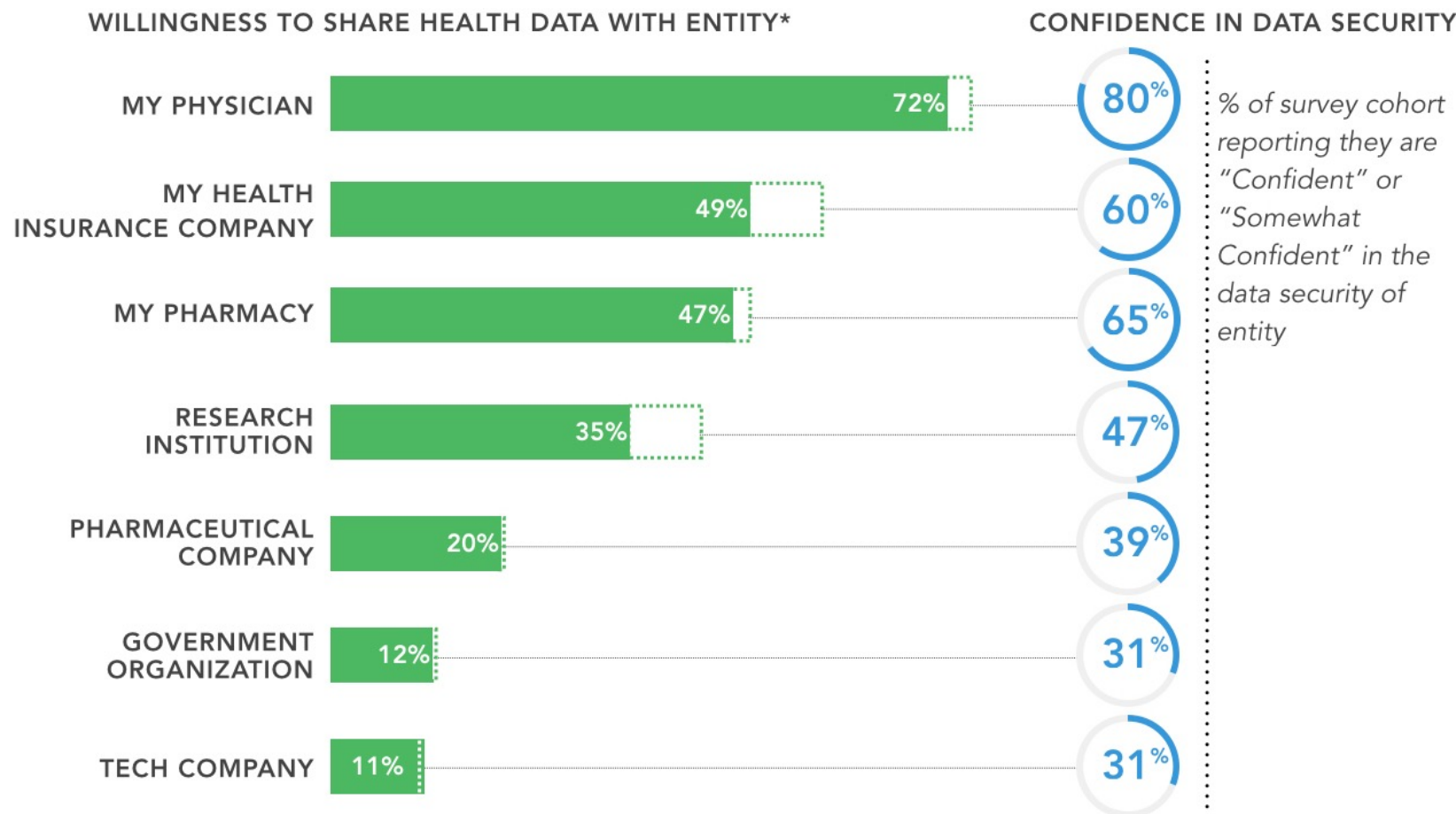
2015-2018



Source: Rock Health Digital Health Consumer Adoption Survey (n₂₀₁₈ = 4,000; n₂₀₁₇ = 3,997; n₂₀₁₆ = 4,015; n₂₀₁₅ = 4,017)

CONSUMER SENTIMENT ON DATA SHARING AND SECURITY

By entity, 2017-2018



Note: *"Health data" includes medical records, genetic information, and physical activity data.

Dashed lines show 2017 responses.

Source: Rock Health Digital Health Consumer Adoption Survey (n₂₀₁₈ = 4,000; n₂₀₁₇ = 3,997; n₂₀₁₆ = 4,015; n₂₀₁₅ = 4,017)

Break



Digital Health Examples

iMetrikus – Numera (Dan Pettus, prior VP and co-founder)

Qualcomm (now Capsule)

Apple iPhone - demonstration

Cuida Health - demonstration

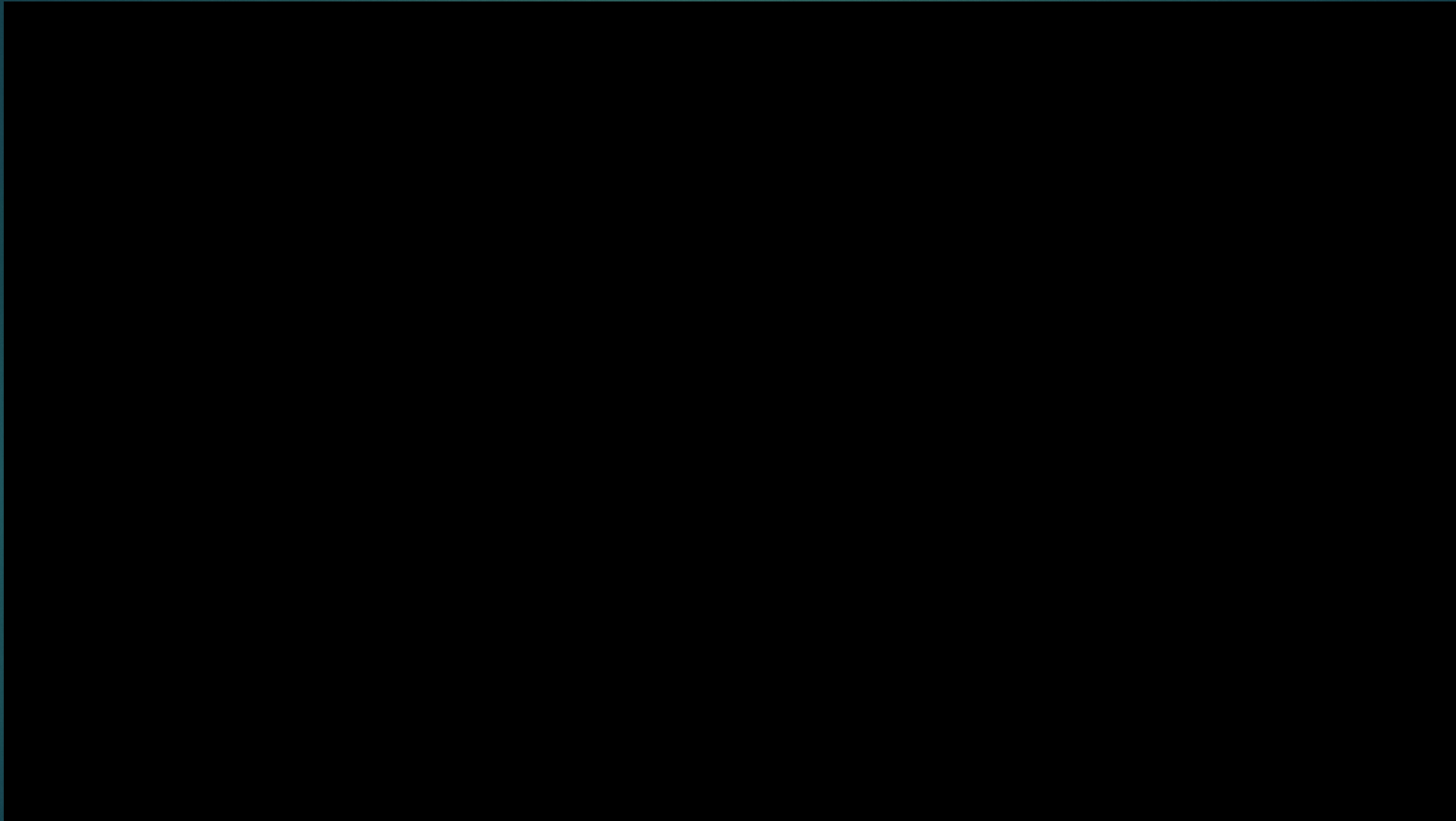
Numera®



Numera[®]



Numera[®] video





Leading a new era of connected intelligent care



Connectivity
expertise



Medical-grade
infrastructure



Expansive
ecosystem



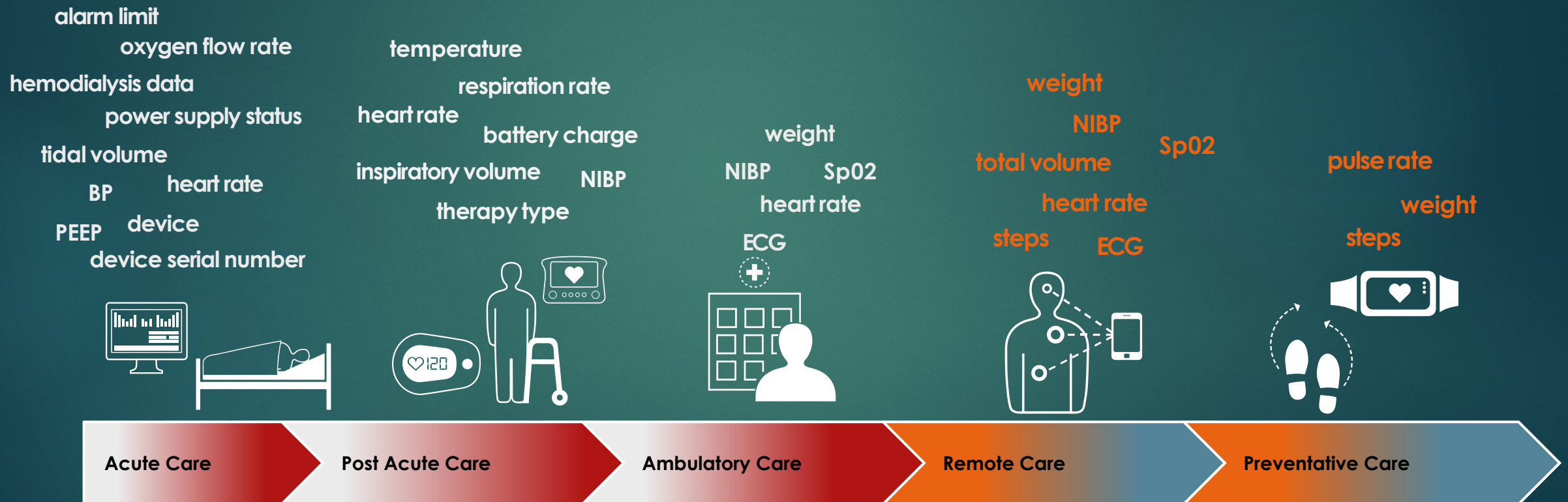
Near real-time
data



Internet of Medical
Things (IoMT)

Intelligent Care Everywhere

Patients & devices now freely move between care settings necessitating **informed connected care** that surrounds the patient





Open, secure medical-grade platform for
remote care



Example IoMT Use Cases

IoMT Drug Device Integration

- ✓ Integrated sensor design and tech licensing
- ✓ Secure capture and transmission across settings



Connected inhalers for COPD and asthma patients, providing patients and providers info on when and how medication is taken:

- Analysis of triggers and responses
- Mobile patient guidance
- Secure sharing across care team

IoMT Connected Diagnostic

✓ Turn key, low power, wireless design



Connected disposable continuous glucose monitors to tell patients their glucose levels, second-by-second, to help understand and manage their diabetes:

- Continuous actionable patient insight
- Inform provider dashboards
- Drive improved outcomes

IoMT Medical-Grade Infrastructure

- ✓ Flexible secure gateways and wireless designs
- ✓ Interoperability across an expansive ecosystem

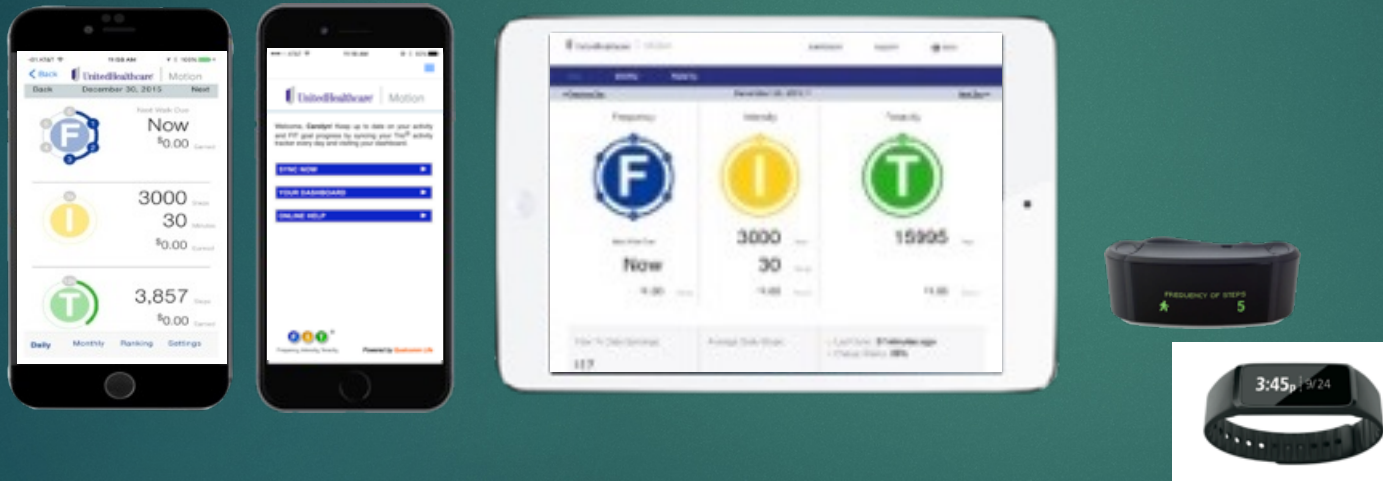


Connected home ventilators and oxygen concentrators to help patients with respiratory disease live more mobile and enjoy better quality of life:

- Scalable RPM solutions
- Speed to market for connected devices
- Contextual near real-time data

IoMT Wellness and Prevention

- ✓ Secure 'always on' connectivity
- ✓ Scalable platform for mass deployment



Connected activity devices to help encourage specific healthy behaviors that have been proven to improve health quality and reduce healthcare costs:

- Member incentives
- Healthier behavior
- Employer savings



iPhone Health Records

DEMONSTRATION

Empower your patients with Health Records on iPhone.

The Health app makes it easier than ever for users to visualize and securely store their health records. Now your patients can aggregate their health records from multiple institutions alongside their patient-generated data, creating a more holistic view of their health.





Introduction to LiSA

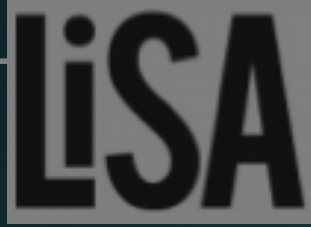
A VOICE-FIRST PLATFORM FOR IMPROVED WELLNESS

FEBRUARY 19, 2019

Why Voice for Seniors?

- ▶ Voice is natural communication style
- ▶ Hands-free interactions and minimal physical interaction with technology
- ▶ Dialog creates frequent engagement and enduring loyalty
- ▶ Excellent channel for personalized content and data collection





An engagement platform for building a custom voice experience

Language Interface for Senior Adults



Google Home



Amazon Echo

- ✓ Promotes health
- ✓ Connects
- ✓ Organizes
- ✓ Informs and entertains

Health Coach, Messaging, Content, Reminders, Activities

Shared Platform for Wellness



Health Provider / Care Team

- Care team dashboard
- Push reminders*
- Push/answer questions
- Push questionnaire
- Receive passive alerts** – call patient



Customer/Patient

- Reminders for medication, taking blood pressure, etc.
- Personalized coaching
- Messaging to Care Team and family
- Manage appointments and calendars



Family & Friends

- Tracking adherence
- Messaging – Voice-to-voice or Voice-to-text
- New questions to ask member

* Personalized for: medication, nutrition, exercise, sleep and mood

** Sent by patient - not 911 – “I feel dizzy. Should I worry?”

How LiSA Helps You

IMPROVE THE HEALTH OF OLDER ADULTS

- Daily adherence reminders, monitoring and reporting
- Reduced burden on Caregivers
- Increased physical and emotional connections

REDUCE COST TO MANAGE POPULATION

- Engaging and frequent use by Older Adults
- Augments and can even replace in-person visits or phone calls
- Leverages content across broad population base

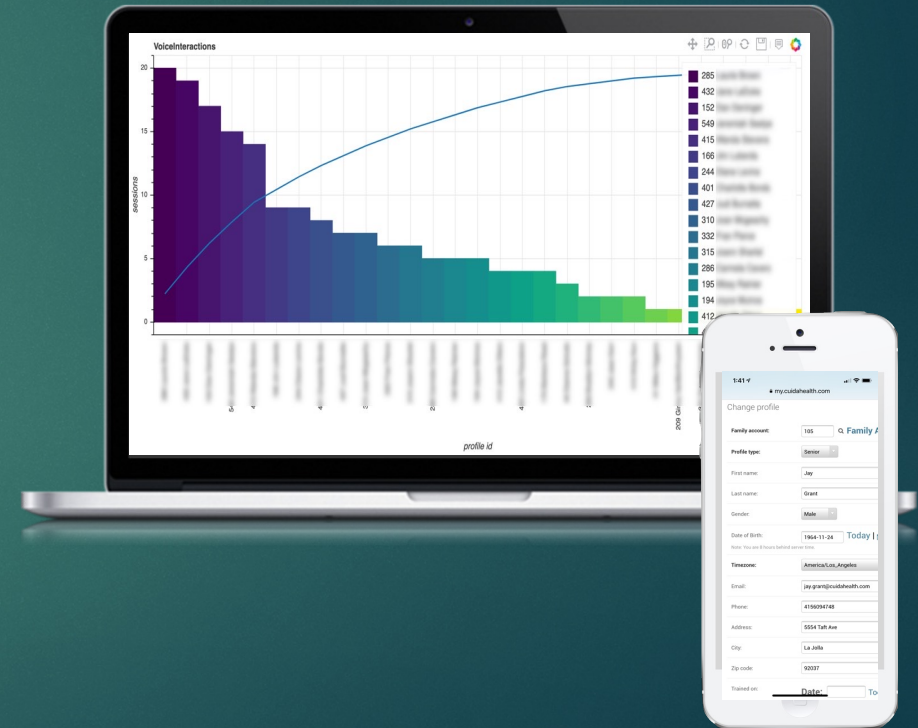
EASY TO DEPLOY, USE & MAINTAIN

- Leverage market-leading hardware/software of Amazon Alexa and Google Assistant devices
- Instrumentation and reporting use familiar UX and UI
- As SaaS, ability to constantly monitor and improve

Multi-modal Administration & Reporting



- ▶ Administrative access from computer, tablet or smartphone via secure portal
- ▶ System alerts via SMS, email and voice messages
- ▶ Visual dashboards constantly updated with relevant information
- ▶ Easy to adjust the frequency and distribution of reports



Voice-first Adoption



- ▶ Voice is the "next" Smartphone
 - ▶ Rapid consumer adoption
 - ▶ Increasing share of time and attention
 - ▶ Early development stages of consumer utility and entertainment
 - ▶ Alexa and Google Assistant integrated into more and more products
 - ▶ Siri, Bixby, Cortana
 - ▶ Other 3rd voice platforms like Mycroft and Dialogflow

**Over 118 Million
Smart Speakers in US**

> 7% of Seniors and Growing!



Source: Voicebot.ai January 2019



Lisa

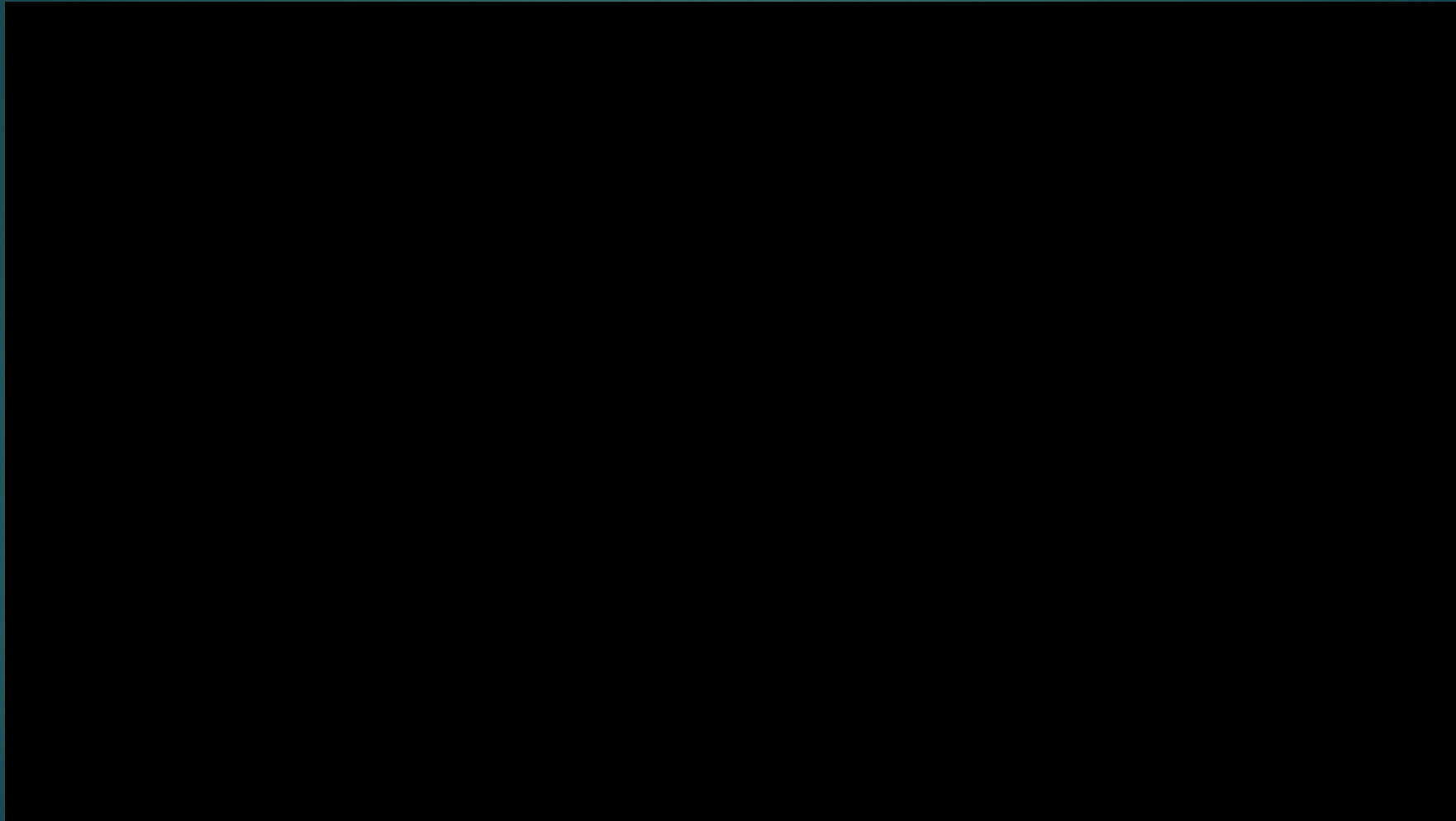
DEMONSTRATION



ELLI•Q

Creepy or helpful ... you decide!

ELLI·Q



WHAT WILL IT TAKE TO SUCCESSFULLY AGE IN PLACE

Adoption of Digital Health

- Better communication using technology
- Improved safety and monitoring
- Greater focus on wellness and prevention
- More opportunity to participate in society