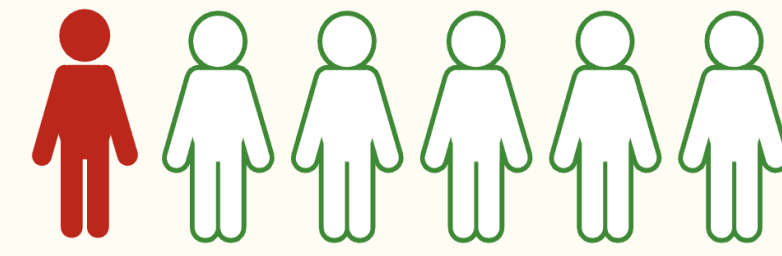




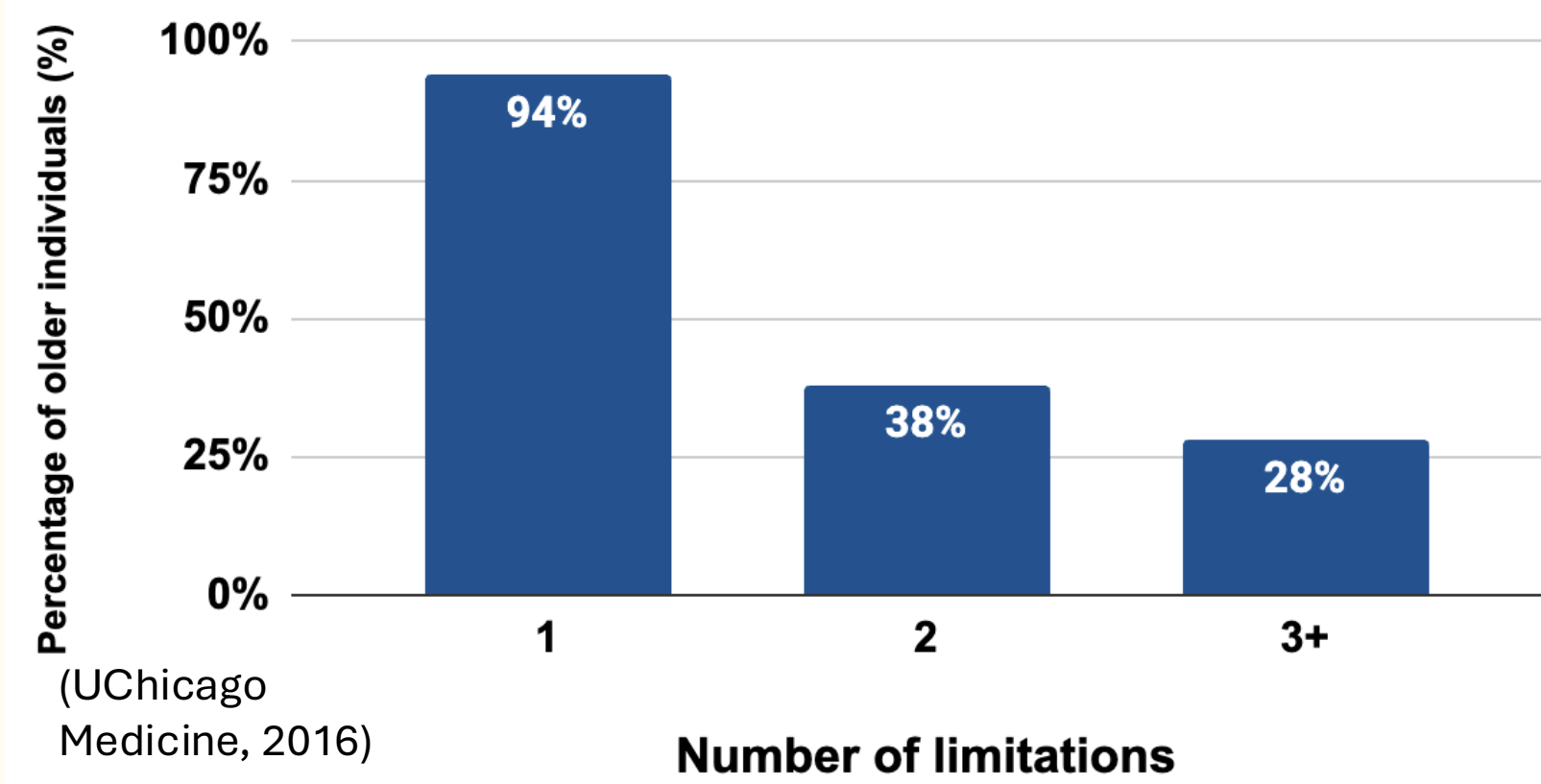
How Might We...
Help elderly individuals with mild to moderate disabilities better evaluate the safety of their food?

Introduction/Problem

1 in 6 Americans get foodborne illnesses annually, with older adults being at a greater risk (CDC, 2024).



Percentage of older individuals (~60+) experiencing any level of sensory limitation in the U.S.



Stakeholder Feedback

Older adults with disabilities **more willing to use new technologies** than expected

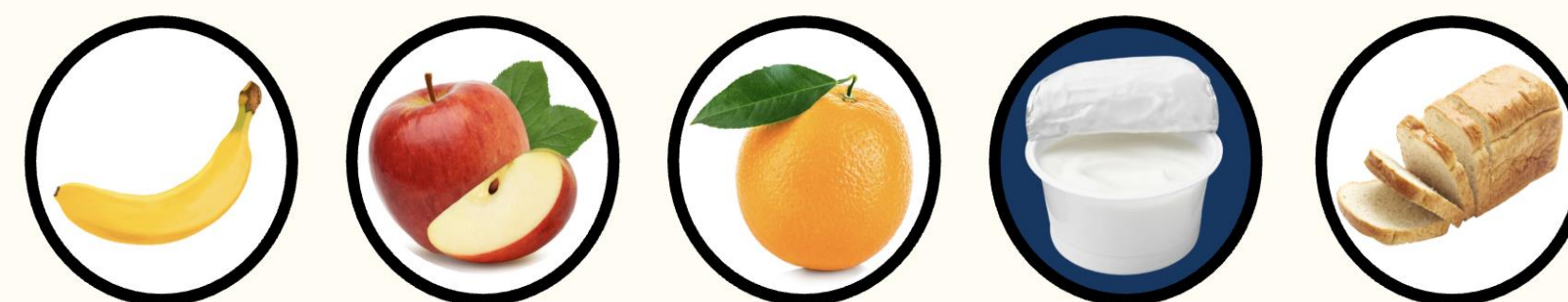


Older adults have **less varied diets**

Many older adults struggle with **maintaining autonomy** as they age

Future Directions

- Create an equation to **model when food becomes unsafe**
- Expand to **other food products**
- **Attach product onto fridge** for convenience
- Improve user interface by **personalizing device outputs**



Traction Experiment

Relating Total Volatile Organic Compound (TVOC) concentrations with yogurt spoilage



Chobani Fage Publix



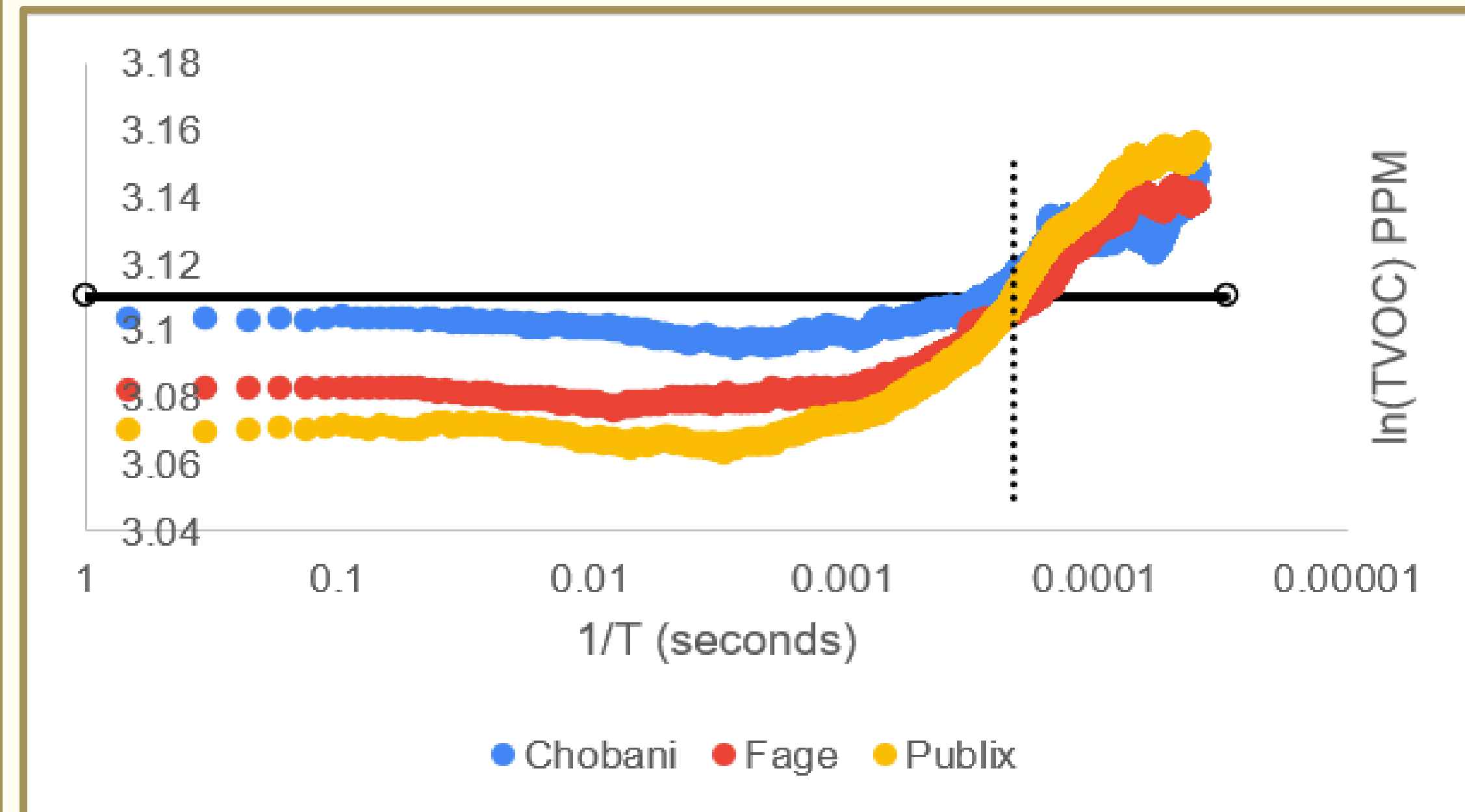
Experiment setup

Hypothesis: Similar food products will display similar trends in TVOC values as they spoil

Context: Yogurt becomes unsafe to consume after **two hours** at room temperature (How Long Can Yogurt Sit Out?, 2017)

Method: Continuously track yogurt TVOC values for 5 hours after removing yogurt from the fridge

Results



Solution



\$3,299



\$92.10

Simple user interface for **independence** Increased **affordability**

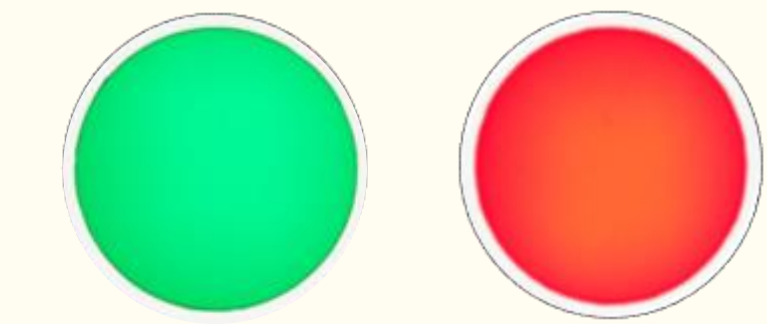
Accommodates **dexterity, auditory, and visual** impairments



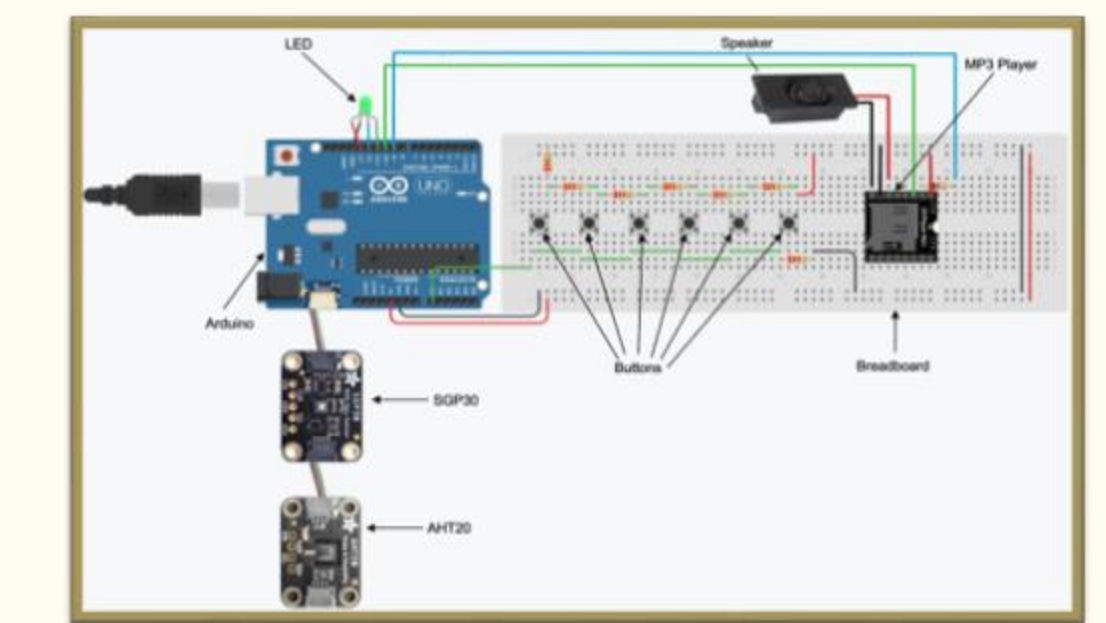
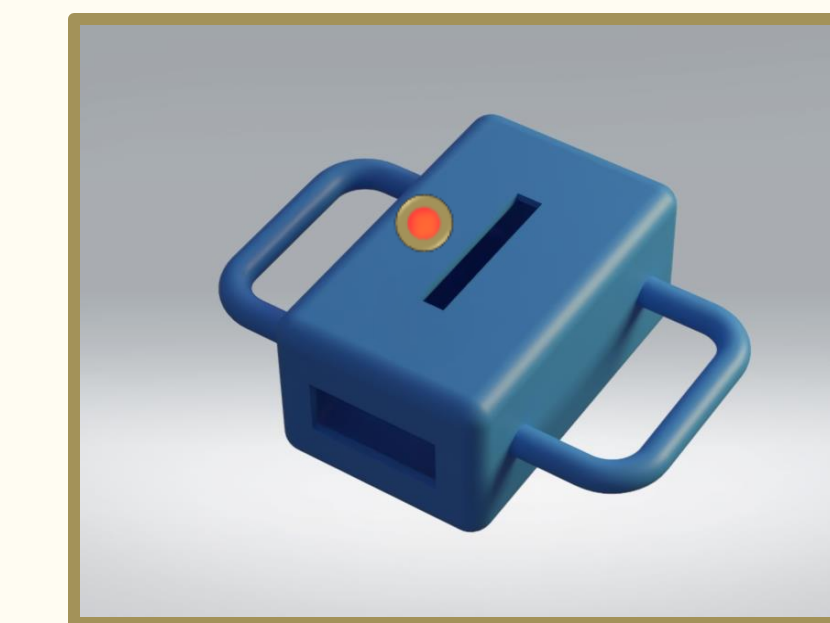
Large buttons



Loud Speaker



Bright LED



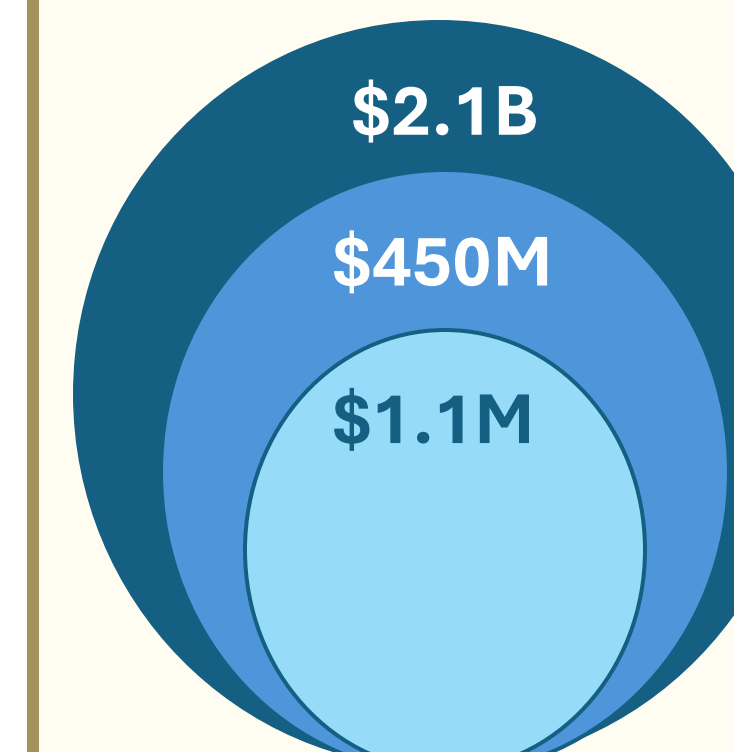
Cost & Sustainability

Revenue Model

- Direct hardware sales
- B2B facility licensing
- Insurance & Medicare pathways

COGS and Pricing

- Prototype unit cost: \$92.10
- Production scale COGS: \$76.86
- Leading alternative: \$3,299



TAM	SAM	SOM
<ul style="list-style-type: none"> • 14M adults 65+ at elevated foodborne illness risk in the US 	<ul style="list-style-type: none"> • 3M with cognitive/sensory impairment affecting food safety judgment 	<ul style="list-style-type: none"> • 150 assisted living facilities × 50 residents at 0.5% market penetration



Problem

Solution

Unique Value Proposition

Unfair Advantage

Customer Segments

- Older adults are experiencing health problems due to consuming spoiled food products
- Older adults are more likely to accumulate or hoard spoiled food products
- Older adults struggle to maintain their independence in the kitchen

- Alerting older adults when their food is spoiled (less reliance on expiration/best buy dates)
- Working with professionals and stakeholders to develop optimal sensor for this user group
- Design simple interface to accommodate user needs and so a caregiver will not be needed

- An objective/well-researched evaluation for multiple food items (dairy, meat, produce, etc.)
- Clearly communicates results to older adults with sensory difficulties (primarily tactile, visual, and auditory)

- Partnership with the Georgia Tech Aware Home
- Connections to chemistry-related and sensing-related experts
- Connections to stakeholders through the Aware Home

- Primary consumers:
 - o Older adults with mild cognitive decline
 - o Older adults with sensory loss
- Beneficiaries:
 - o Older individuals
 - o Family members
 - o Caregivers

Extrinsic Alternatives

- Subjective "sniff tests"
- Subjective visual assessments
- Hiring a caregiver
- Assisted living facilities

High Level Concept

Food spoilage data/ knowledge = reduced cases of foodborne illnesses

Channels

- Sell/send product to assisted living services and facilities like Tools for Life (encourage people to be open to assistive tech)
- Children of older adults can buy for parents

Early Adopters

- Older adults with a singular moderate disability (visually impaired, loss of smell)
- Not major cognitive decline
- Approximately 65 to 75 years old
- Unable to afford caretakers and senior living centers

Cost Structure

Research and Development (R&D): Costs for prototyping the “objective sensor” for dairy, meat, and produce. This includes laboratory testing to ensure sensor accuracy and reliability.
Manufacturing and Materials: The physical cost of the sensors
Software & Data Management: Maintaining the user interface for caregivers and the data backend that tracks food spoilage metrics.
Compliance and Safety Testing: Costs associated with food-safe materials and meeting health regulations, given our goal to reduce foodborne illness.
Marketing and Outreach: Specifically targeting assisted living facilities, “Tools for Life,” and the children of our target population.

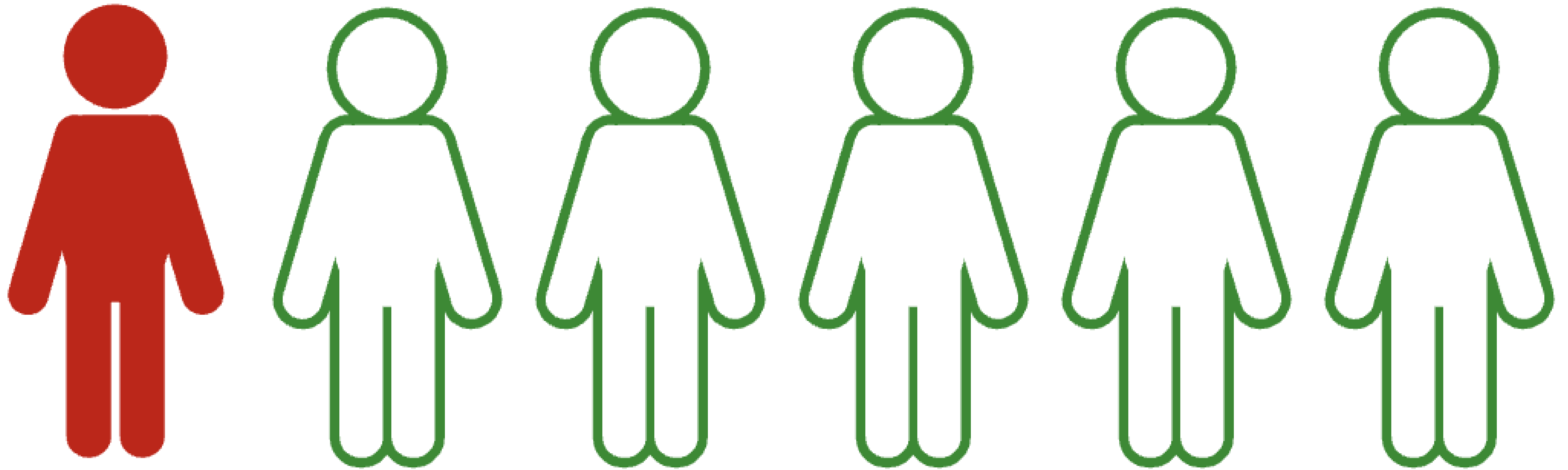
Revenue Streams

Direct Hardware Sales: One-time purchases of the sensor units.
Subscription Model (SaaS): Users pay a monthly fee for real-time monitoring, caregiver alerts via the user interface, and data insights.
B2B Licensing: Selling or licensing the technology to assisted living facilities and professional care services as a value-add for their residents.
Replacement/Refill Fees: If the sensors use chemical reagents or have a limited lifespan (common in food-sensing tech), charging for recurring sensor replacements.
Insurance Partnerships: Long-term potential to have the device covered or subsidized by health insurance providers or Medicare, as it serves as a preventative health tool for “aging in place.”

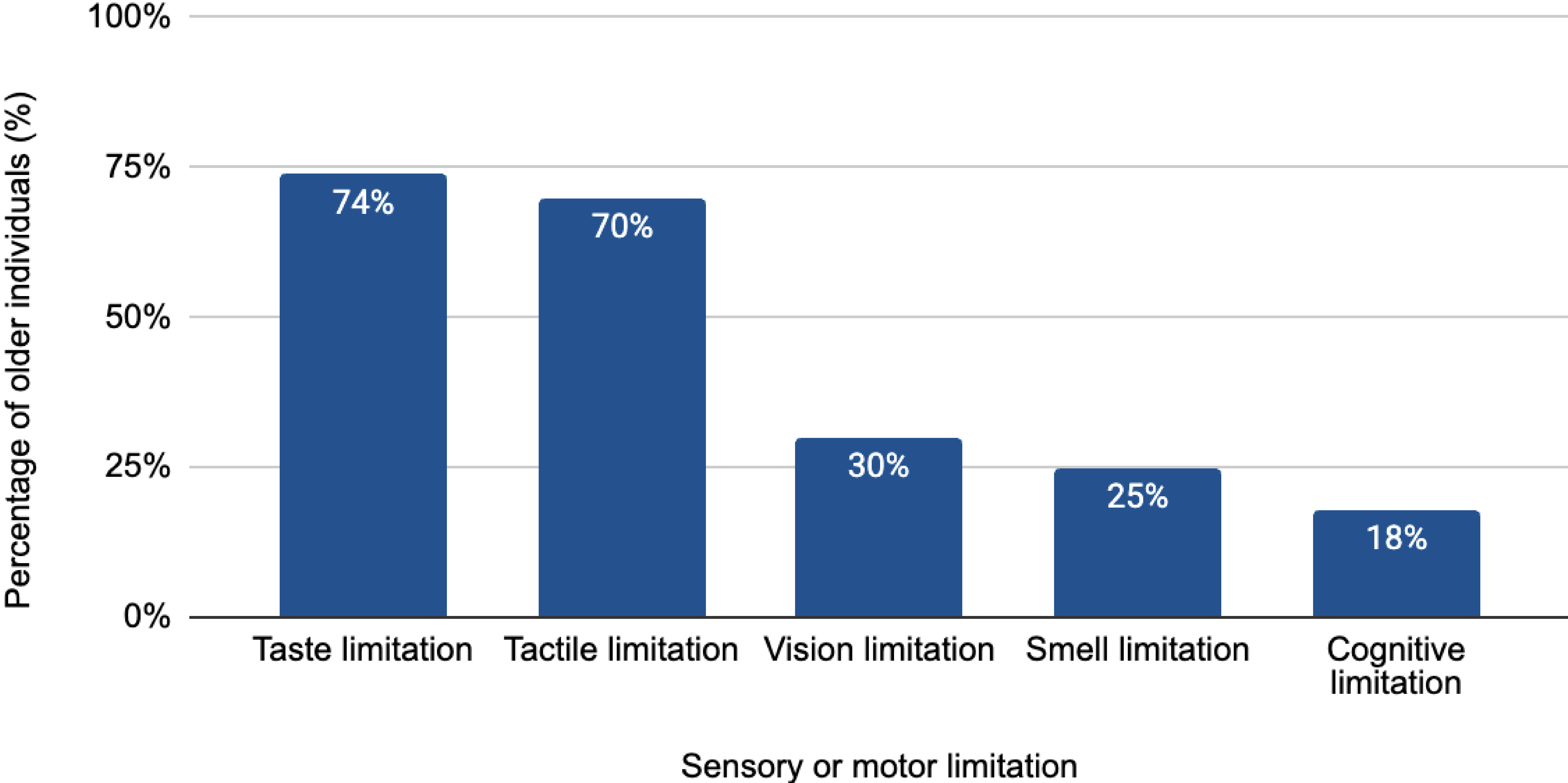
Click Through the Presentation for Additional
Figures, Enlarged Figures, and References

Introduction/Problem

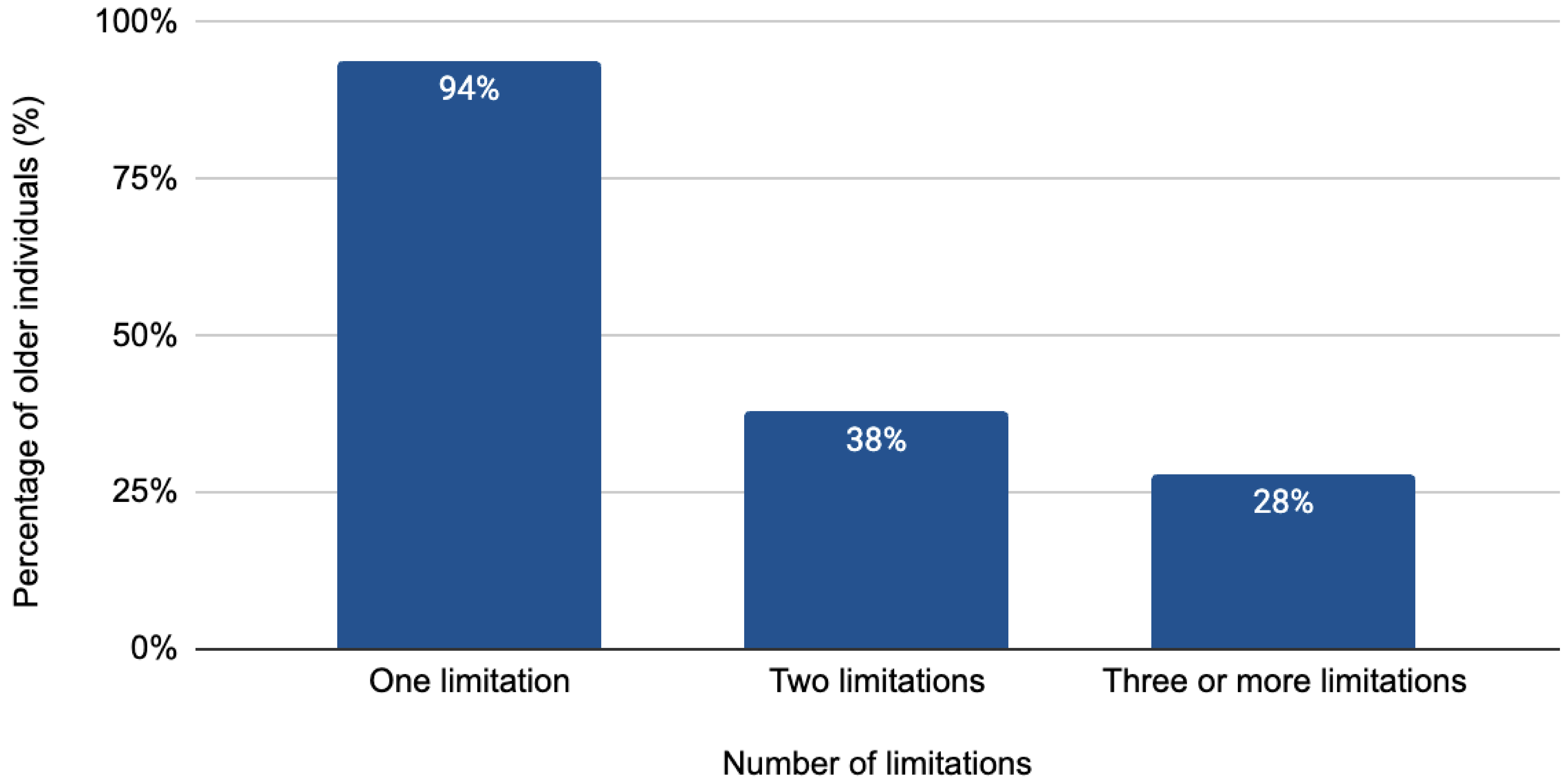
1 in 6 Americans contract foodborne illnesses annually



Common sensory and motor limitations and the percentages of older individuals (~60+) affected in the U.S.

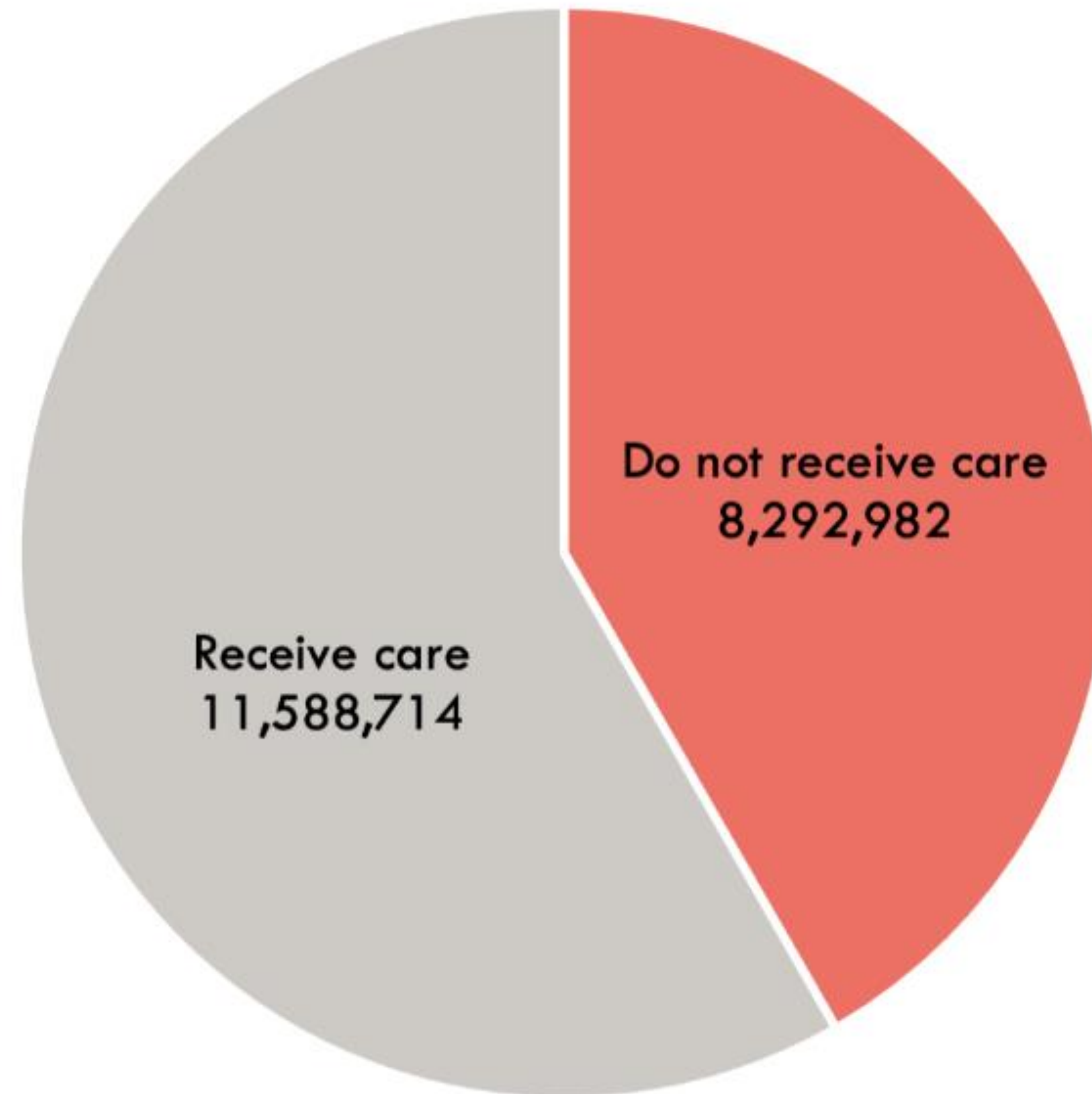


Percentage of older individuals (~60+) experiencing any level of sensory limitation in the U.S.



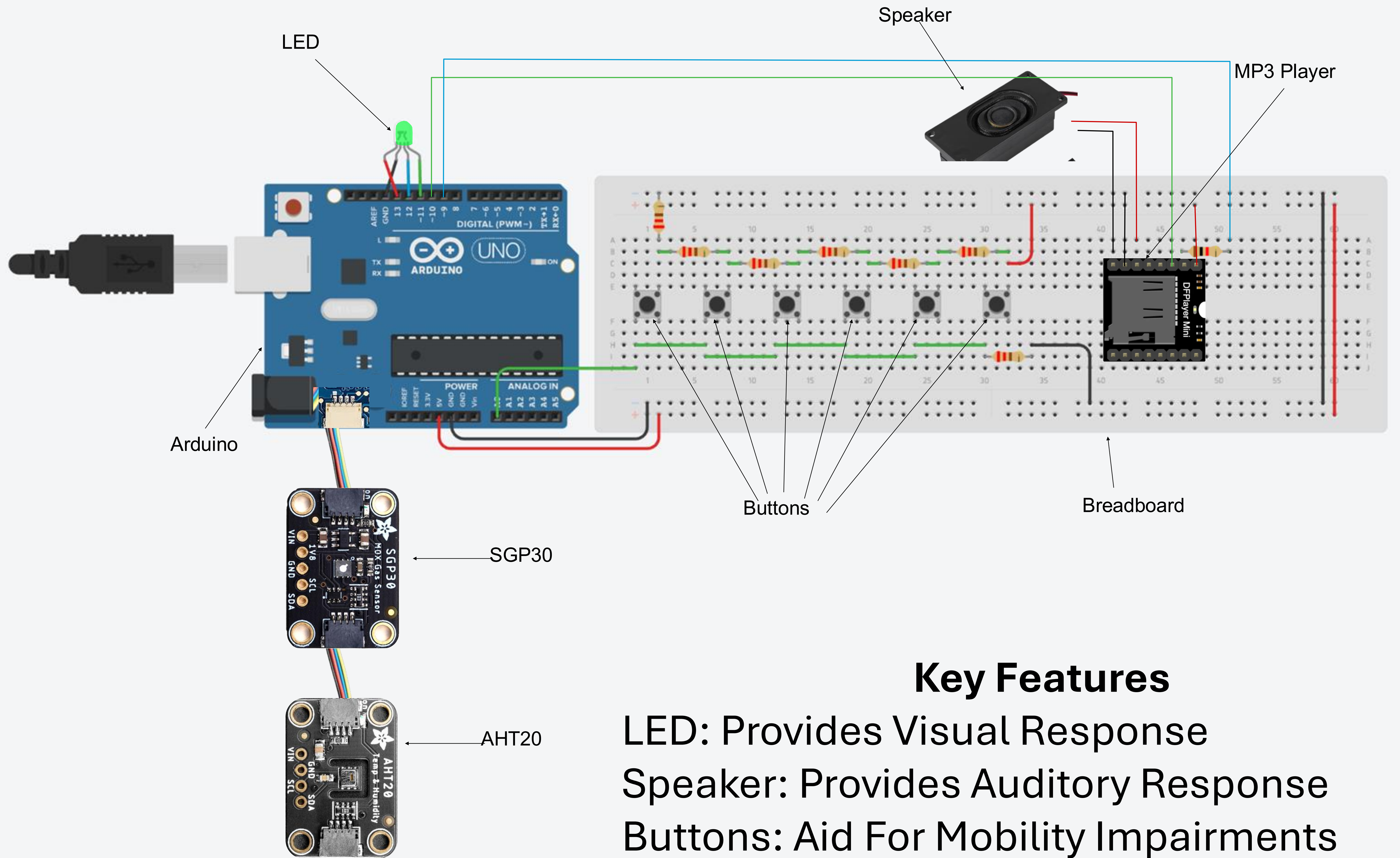
(Easton, 2016)

Number of adults age 55+ who have difficulty with daily activities who do and do not receive care, 2020



Direct figure from <https://www.economicpolicyresearch.org/research/us-caregiving-system-leaves-significant-unmet-needs-among-aging-adults#:~:text=Source:%20SCEPA%20calculations%20using%202020,taking%20medication%2C%20and%20preparing%20meals.>

Solution



Key Features

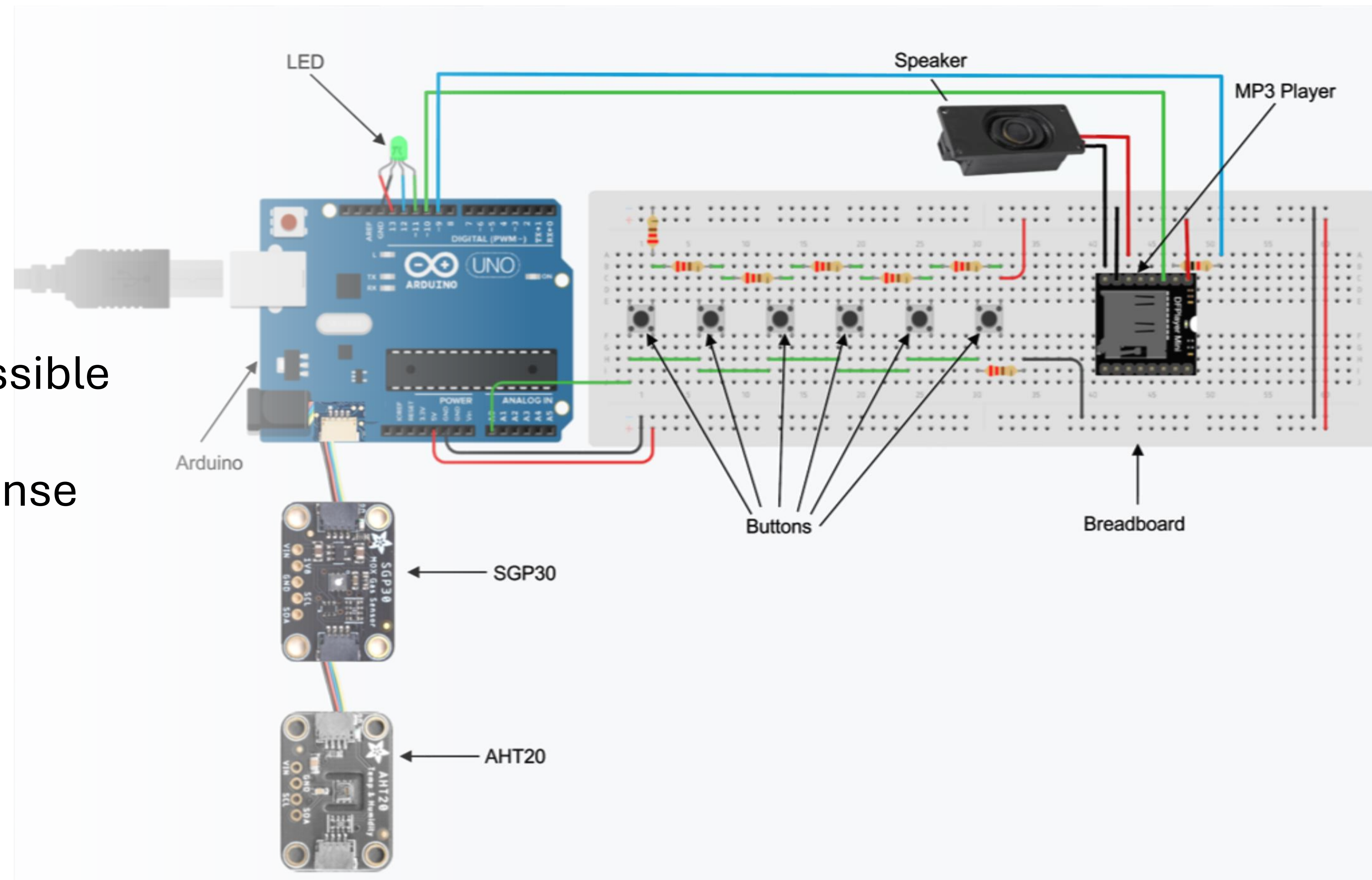
LED: Provides Visual Response

Speaker: Provides Auditory Response

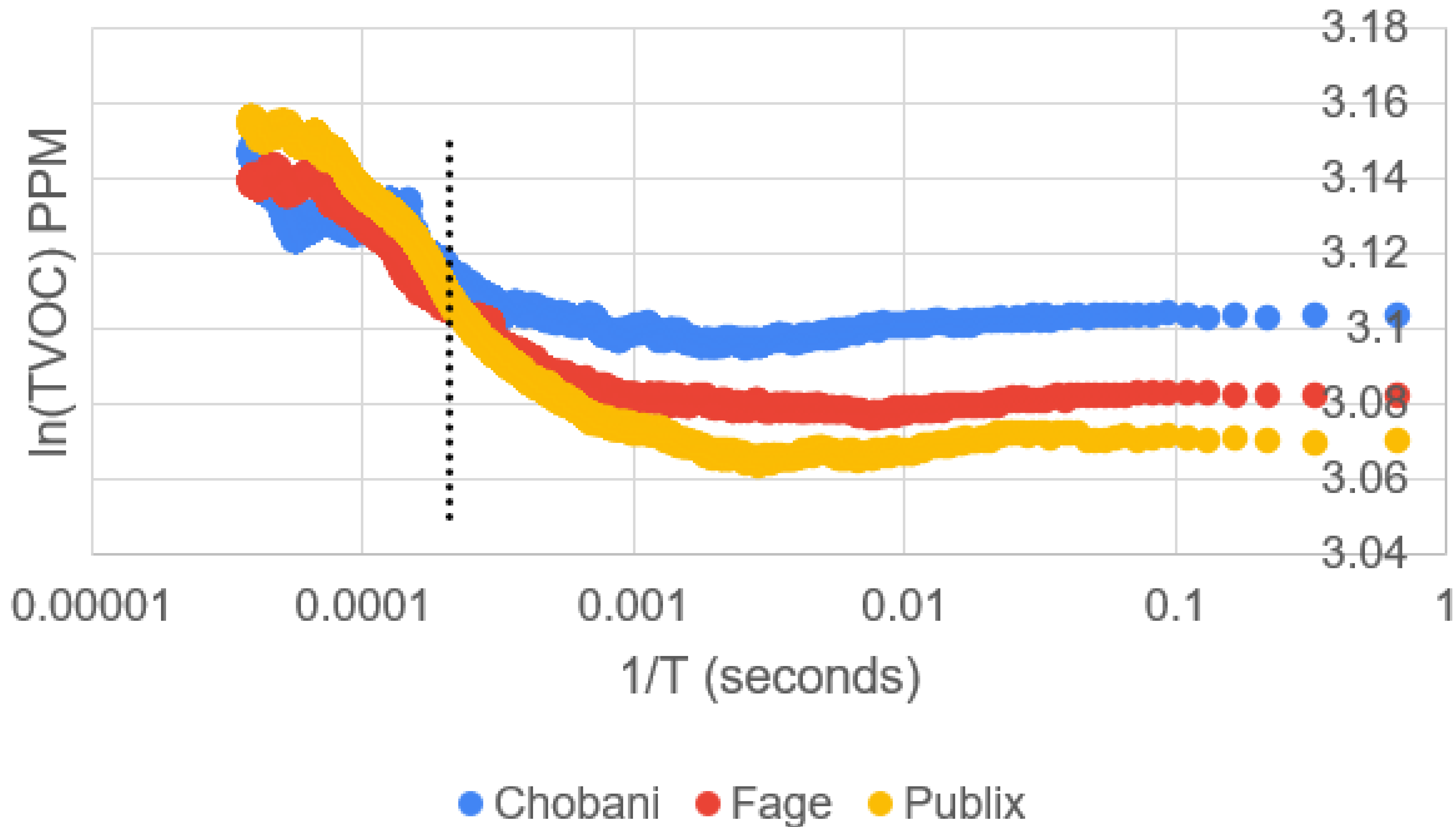
Buttons: Aid For Mobility Impairments

Key Features:

- Large, labeled **buttons** are accessible
- **LED** provides visual response
- **Speaker** provides auditory response



Traction experiment



Dotted Black Line represents the two-hour mark of the experiment

References

Easton, J. (2016). UChicago Medicine. <https://www.uchicagomedicine.org/forefront/news/sensory-loss-affects-94-percent-of-older-adults>

<https://www.fda.gov/food/consumers/people-risk-foodborne-illness#:~:text=However%2C%20when%20certain%20disease%2Dcausing,in%206%20Americans%20each%20year>

How Long Can Yogurt Sit Out? (2017, March 7). [Www.usdairy.com](http://www.usdairy.com). <https://www.usdairy.com/news-articles/how-long-can-yogurt-sit-out>

[Bespoke 29 cu. ft. 4-Door Flex™ Refrigerator with AI Family Hub™+ in Stainless Steel | Samsung US](#)

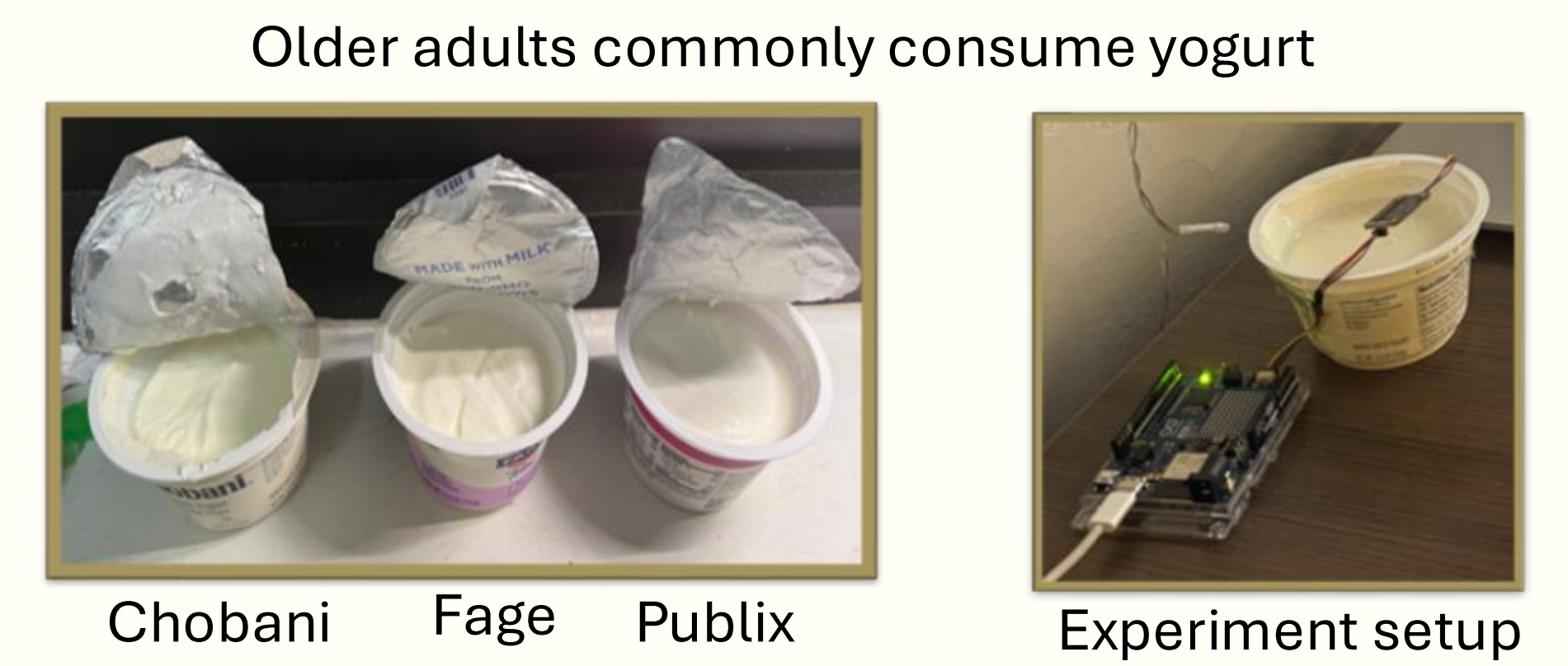
<https://www.cdc.gov/food-safety/foods/adults-65-older.html>



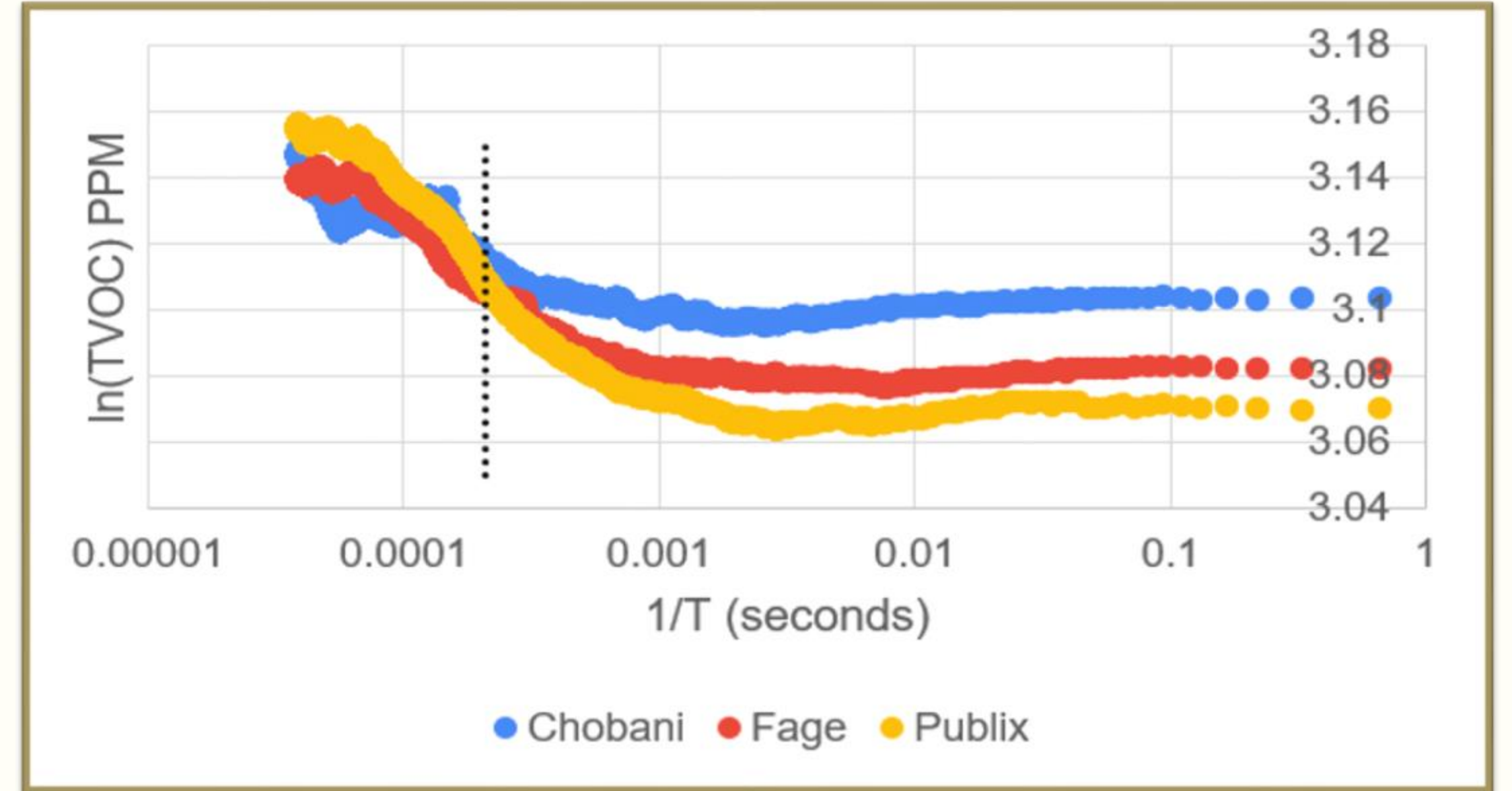
How Might We...
 Help elderly individuals with mild to moderate disabilities better evaluate the safety of their food?

Traction Experiment

Relating Total Volatile Organic Compound (TVOC) concentrations with food spoilage
 Analysis of multiple yogurt brands



Hypothesis
 Similar food products will display similar trends in TVOC values as they spoil



Yogurt becomes unsafe to consume after remaining at room temperature for two hours (*How Long Can Yogurt Sit Out?*, 2017)

Future Directions

- Create an equation to model when food becomes unsafe
 - Expand to other food products (meat, bread, rice, produce, etc.)
 - Attach product onto fridge to increase convenience
 - Improve user interface by personalizing device outputs
-

Introduction/Problem

1 in 6 people in the U.S. are above the age of 65 (U.S. Census, 2023).

1 in 6 people in the U.S. get foodborne illnesses annually, with older adults being at a greater risk (CDC, 2024).

Solution

Guiding Our Solution

Simple user setup and interface to maintain independence

Accessible design for those with mobility, auditory, or visual impairments

Increased affordability compared to status quo solutions

Bespoke AI 4-Door Flex™
\$3,299.00

Key Features:

- Large, labeled **buttons** are accessible
- **LED** provides visual response
- **Speaker** provides auditory response

Stakeholder Feedback

- Older adults with disabilities more willing than expected to use new technologies
 - Older adults have less variety in their diets
 - Many older adults struggle with maintaining autonomy as they age
-
-



Cost & Sustainability

<p>Revenue Model</p> <ul style="list-style-type: none"> • Direct hardware sales • B2B facility licensing: assisted living facilities and professional care services • Insurance & Medicare pathways: long-term coverage as a preventative “aging in place” tool 	<p>Sustainability Factors</p> <ul style="list-style-type: none"> • Modular, open-source hardware allows sensor upgrades • Each device can avert ~\$3,000–\$10,000 in hospitalization costs • Expandable across food categories 	<p>Our prototype costs \$92.54 total (cheaper for bulk orders), 97% less than the next best alternative, the Bespoke AI 4-Door Flex, priced at \$3,299.</p>
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