2020 HEALTH VIRTUAL MEETING

ED CYMERYS, FSA, MAAA

Session 6, An Update from Leaders of Some of the Most Innovative Companies in Silicon Valley

June 9, 2020

SOCIETY OF ACTUARIES

SOCIETY OF ACTUARIES
Antitrust Compliance Guidelines

Active participation in the Society of Actuaries is an important aspect of membership. While the positive contributions of professional societies and associations are well-recognized and encouraged, association activities are vulnerable to close antitrust scrutiny. By their very nature, associations bring together industry competitors and other market participants.

The United States antitrust laws aim to protect consumers by preserving the free economy and prohibiting anti-competitive business practices; they promote competition. There are both state and federal antitrust laws, although state antitrust laws closely follow federal law. The Sherman Act, is the primary U.S. antitrust law pertaining to association activities. The Sherman Act prohibits every contract, combination or conspiracy that places an unreasonable restraint on trade. There are, however, some activities that are illegal under all circumstances, such as price fixing, market allocation and collusive bidding.

There is no safe harbor under the antitrust law for professional association activities. Therefore, association meeting participants should refrain from discussing any activity that could potentially be construed as having an anti-competitive effect. Discussions relating to product or service pricing, market allocations, membership restrictions, product standardization or other conditions on trade could arguably be perceived as a restraint on trade and may expose the SOA and its members to antitrust enforcement procedures.

While participating in all SOA in person meetings, webinars, teleconferences or side discussions, you should avoid discussing competitively sensitive information with competitors and follow these guidelines:

- **Do not** discuss prices for services or products or anything else that might affect prices
- **Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- **Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- **Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
- **Do** alert SOA staff and/or legal counsel to any concerning discussions
- **Do** consult with legal counsel before raising any matter or making a statement that may involve competitively sensitive information.

Adherence to these guidelines involves not only avoidance of antitrust violations, but avoidance of behavior which might be so construed. These guidelines only provide an overview of prohibited activities. SOA legal counsel reviews meeting agenda and materials as deemed appropriate and any discussion that departs from the formal agenda should be scrutinized carefully. Antitrust compliance is everyone's responsibility; however, please seek legal counsel if you have any questions or concerns.

Presentation Disclaimer

Presentations are intended for educational purposes only and do not replace independent professional judgment. Statements of fact and opinions expressed are those of the participants individually and, unless expressly stated to the contrary, are not the opinion or position of the Society of Actuaries, its cosponsors or its committees. The Society of Actuaries does not endorse or approve, and assumes no responsibility for, the content, accuracy or completeness of the information presented. Attendees should note that the sessions are audio-recorded and may be published in various media, including print, audio and video formats without further notice.

Innovation Continues in Silicon Valley

- San Francisco is headquarters for GitHub, Splunk, Dropbox, LinkedIn, Salesforce, Slack, Yelp and many more well known technology companies
- Increasingly venture capital and dynamic company founders are fueling innovation in the way health benefits are delivered

Leveraging Technology

- Identifying health risks earlier using technology including predictive AI
- Better tools to identify patients who can benefit from specific programs
- Increasing the use of these programs by guiding members to the specific programs most beneficial to them
- Integrating these programs and measuring results

Our panel

- Mylea Charval, Ph.D. CEO and Founder, Savonix
  - Tools for early identification of the onset of dementia
- Raj Behal, MD, MPH, Chief Quality Officer, One Medical
  - Changing the way primary care is delivered
- Dave Sotelo, FSA, MAAA, Actuarial Manager, Collective Health
  - Integration and evaluation of more than 70 distinct 3rd party solutions

Logistics

- Each panelist will spend about 15 minutes presenting information about their programs
- We will have 20 minutes for Q & A at the end of the session
  - Use the Q & A Function
  - I will take your questions and moderate the Q & A session
  - Any questions that we do not get to will be answered …

one medical

2020 Society of Actuaries

Innovators in Silicon Valley - Health Care

June 9th, 2020

One Medical

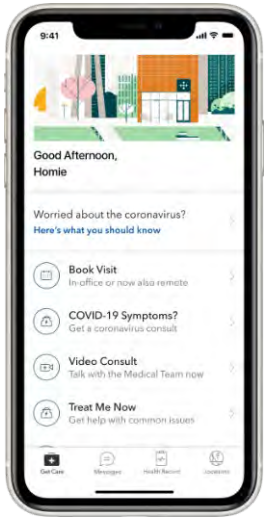
Raj Behal, MD, MPH, Chief Quality Officer

- Practicing physician
- Former Chief Quality Officer, associate dean for quality, and clinical professor of Medicine at Stanford
- Former Associate Chief Medical Officer at Rush University Medical Center

One Medical is a modern approach to care

One Medical is a national, membership-based primary care practice. From preventive care, to mental health, to COVID-19 screening and testing, One Medical is your team's healthcare home base. With 24/7 access to virtual care and 80+ offices across ten U.S. cities, we're here whenever and wherever they need care.

Inviting, conveniently-located offices with same-day appointment availability*



Online appointment booking and 24/7 video visits with providers

More time with top-rated providers who listen —and can help with more than you may think

Technology-powered

47% of members visit web/app monthly (1)

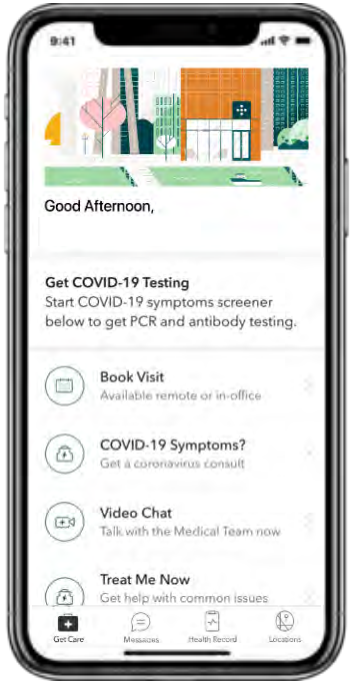
3x digital to in-office encounters (2)

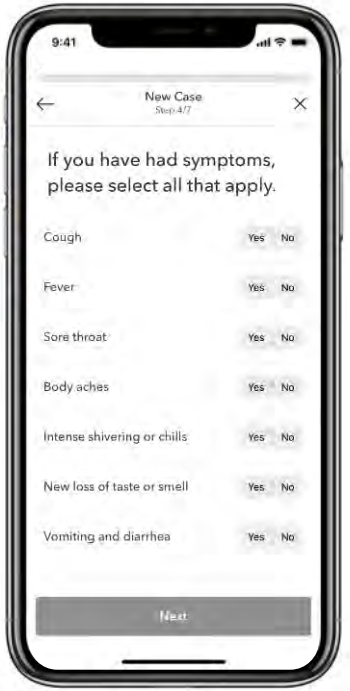
69% completion of member health tasks (2)

77 conditions have automated digital follow up

44% reduction in provider EHR tasks (3)

97% generic Rx powered by our algorithms (4)





(1) Data from September 30, 2019 last nine months
(2) Data from September 30, 2019 last twelve months
(3) One Medical estimate vs 2019 industry comparison - EHR Industry tasks, Health Affairs 38, No. 7
(4) For common conditions

A modern health benefit, designed for real -life

One Medical is a premium healthcare benefit that delivers high-quality healthcare wherever your employees work, live, shop and click.

- Attracting & retaining employees with a benefit they love
- Engaging employees to live healthier, more productive lives
- Combining the best of primary care with innovative technology to lower costs over time
- Delivering a comprehensive return to workplace program: Healthy Together

Healthy Together: One Medical's return -to workplace program

Healthy Together is our comprehensive, evidence-based program to help our employer partners navigate workplace reentry and get back to work safely.

- Developed by One Medical clinical and public health experts
- A strategic framework to aid in planning, alongside actionable implementation guides
- Powered by One Medical's proprietary technology platform
- Delivered by One Medical's exceptional providers who care for the whole person, body and mind
- All intended to guide you and your teams safely through planning, re-entry, and beyond as your healthcare home base
- Included as a benefit of partnership

HEALTHY TOGETHER

A phased, cohort -based approach

Daily COVID-19 screening & status badge

Comprehensive testing solutions

Workplace safety recommendations

Employee/ Student communication resources

24/7 access to care

Approach to Care and Quality

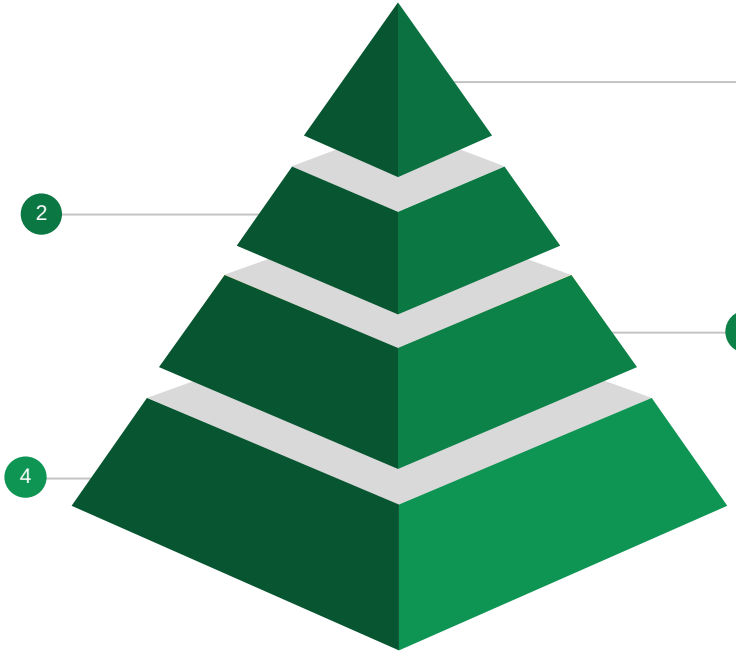
PATIENT CENTERED ONE MEDICAL HOME

Six Components of our Care Model

ACCESS	TEAM BASED CARE	EVIDENCE-INFORMED	WHOLE PERSON CARE	COORDINATED CARE	OUTCOMES DRIVEN
Access when needed, in-office PCP or 24x7 virtual care clinicians	PCPs, virtual clinical team, office staff, care nav & coaches (PT, chiro, mental health @ onsites)	Guidelines & protocols with shared decision making to account for patient preferences	Relationship-based care for physical and mental health	Information sharing with specialists, managing referrals, directing care	Focus on individual and population health and costs

One Medical Care Model designed to provide excellent experience with better health and more cost-efficient care

ONE MEDICAL WHOLE-PERSON OUTCOMES FRAMEWORK



Recovery

1

Enhancing recovery from acute conditions to allow re -engagement in family and work

Lifespan

Protecting lifespan with screening, early detection and prevention of illness

2

Wellbeing

3

Optimizing mental and physical wellness for peak performance

Care Efficiency

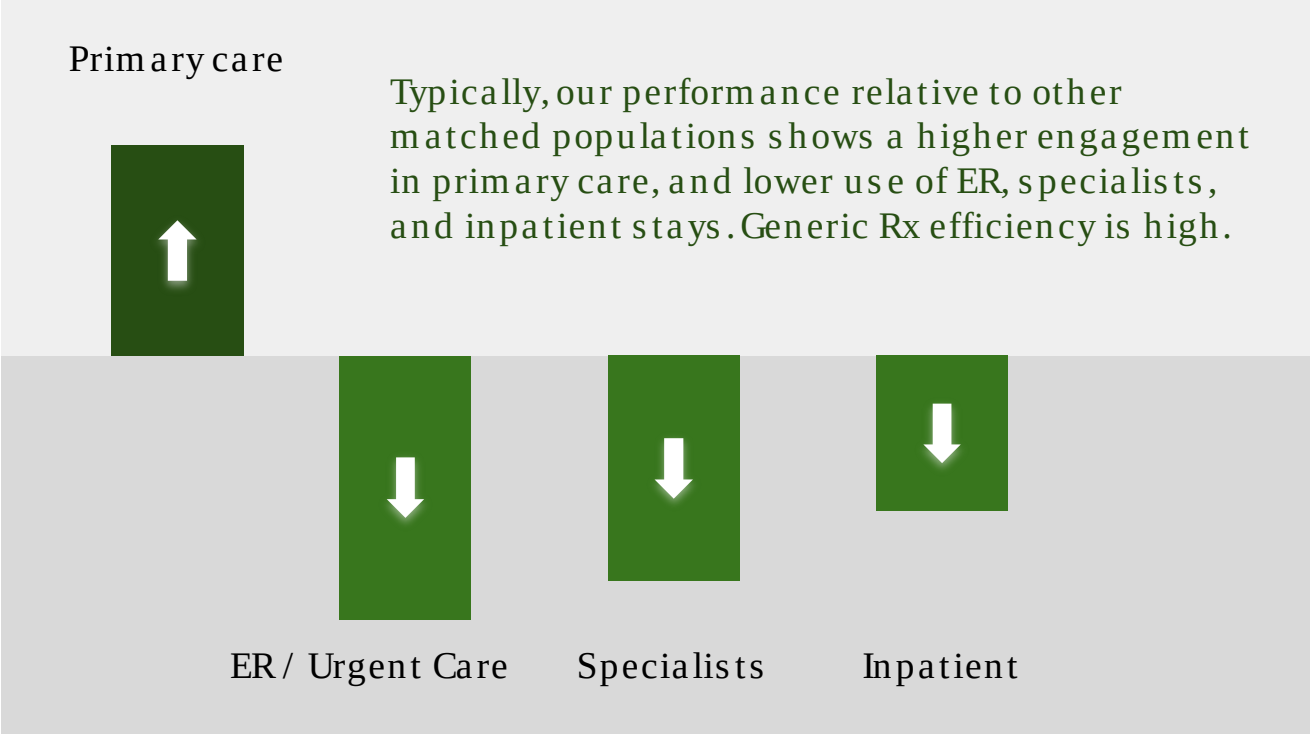
Reducing total cost of care by managing downstream costs and clinical conditions

4

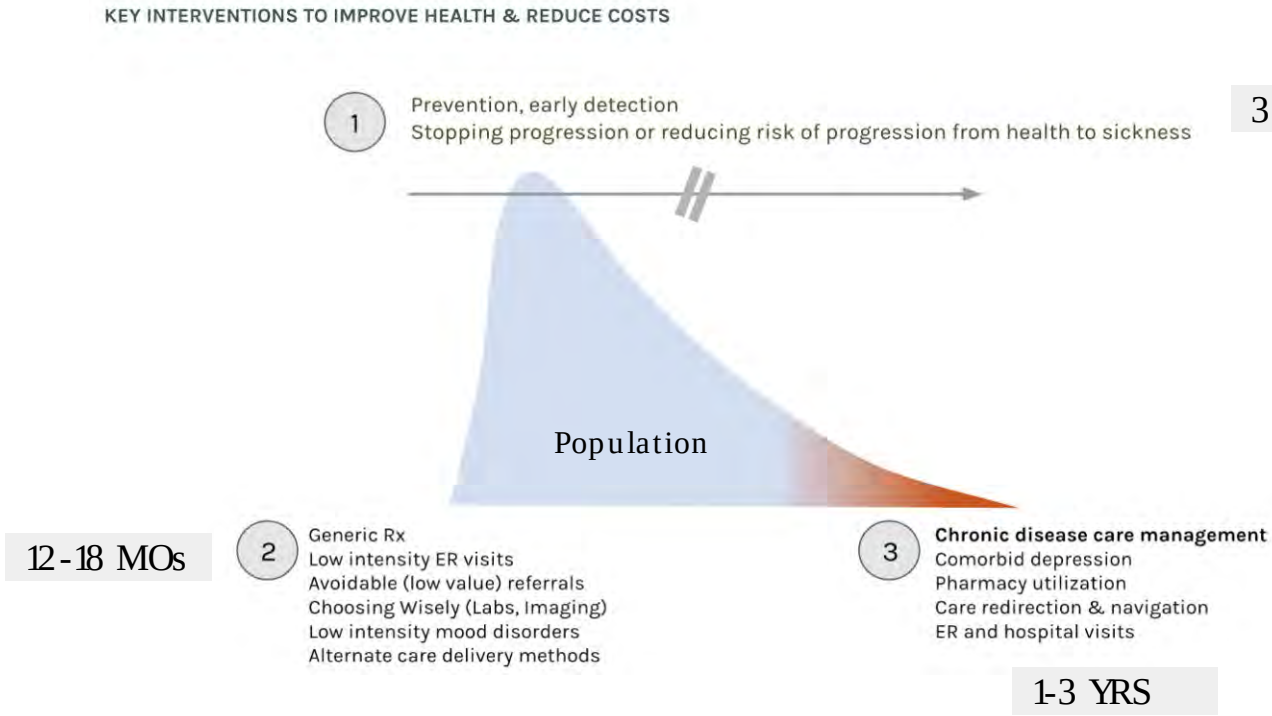
Our outcomes framework is designed to tackle what ails the modern society while being responsible stewards of healthcare resources. We take an **expansive view** of what people want from healthcare: Longer, healthier lives with physical as well as mental wellbeing.

Measuring Cost Impact

IMPACT PATTERNS IN RESOURCE USE AND COSTS



TOTAL COST OF CARE: LEVERS AND "PAYOFF" IMPACT HORIZONS



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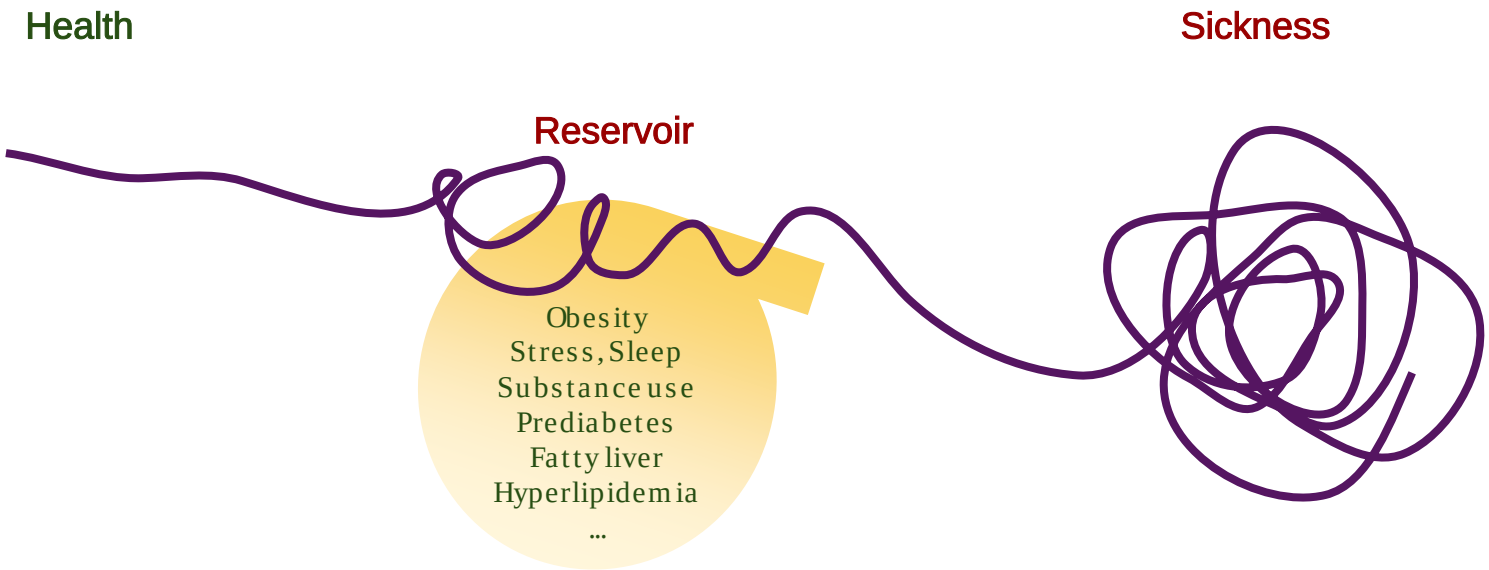
IN SICKNESS AND IN HEALTH - AND IN THE SPACE BETWEEN

To tackle *long-term* outcomes and costs, we are targeting the **space between health and sickness** - the **reservoir for *future* chronic diseases and costs**



ONE MEDICAL PROMOTES AN INTELLIGENT HEALTHCARE JOURNEY

Combining the best of primary care with innovative technology to lower costs by 8-45%

Case Study #1 - Aerospace manufacturer (onsite)

45% Medical Cost Savings ($167 PEPM)

Lower spending in:

- Specialty (54%)
- Surgery (43%)
- Emergency (33%)
- Rx (36%)

Original Investigation | Health Policy

April 30, 2020

Utilization and Cost of an Employer-Sponsored Comprehensive Primary Care Delivery Model

Sanjay Basu, MD, PhD[1,2,3]; Tyler Zhang, BA[4]; Alli Gilmore, PhD[5]; et al

Author Affiliations | Article Information

JAMA Netw Open. 2020;3(4):e203803. doi:10.1001/jamanetworkopen.2020.3803

JAMA
The Journal of the American Medical Association

A 2020 peer-reviewed population-based cohort study compared medical claims costs of One Medical-attributed members (inclusive of onsite services) to members attributed to other providers.

Case Study #2 - Professional services

8.3% Total Cost Savings ($38 PEPM)

Savings in:

- Medical Costs (3.5%)
- Time Costs (4.0%)
- Virtual Replacement (0.8%)

Avoided Utilization Over the 1 Year Study

237 ER & Urgent Care Visits

1,365 Specialty Care Visits

A 2018 claims-based study, conducted with client's in-house actuarial team, measuring medical cost savings, reduced employee non-productive time, and virtual care replacement savings, comparing the client's engaged One Medical members to a cohort of non-members

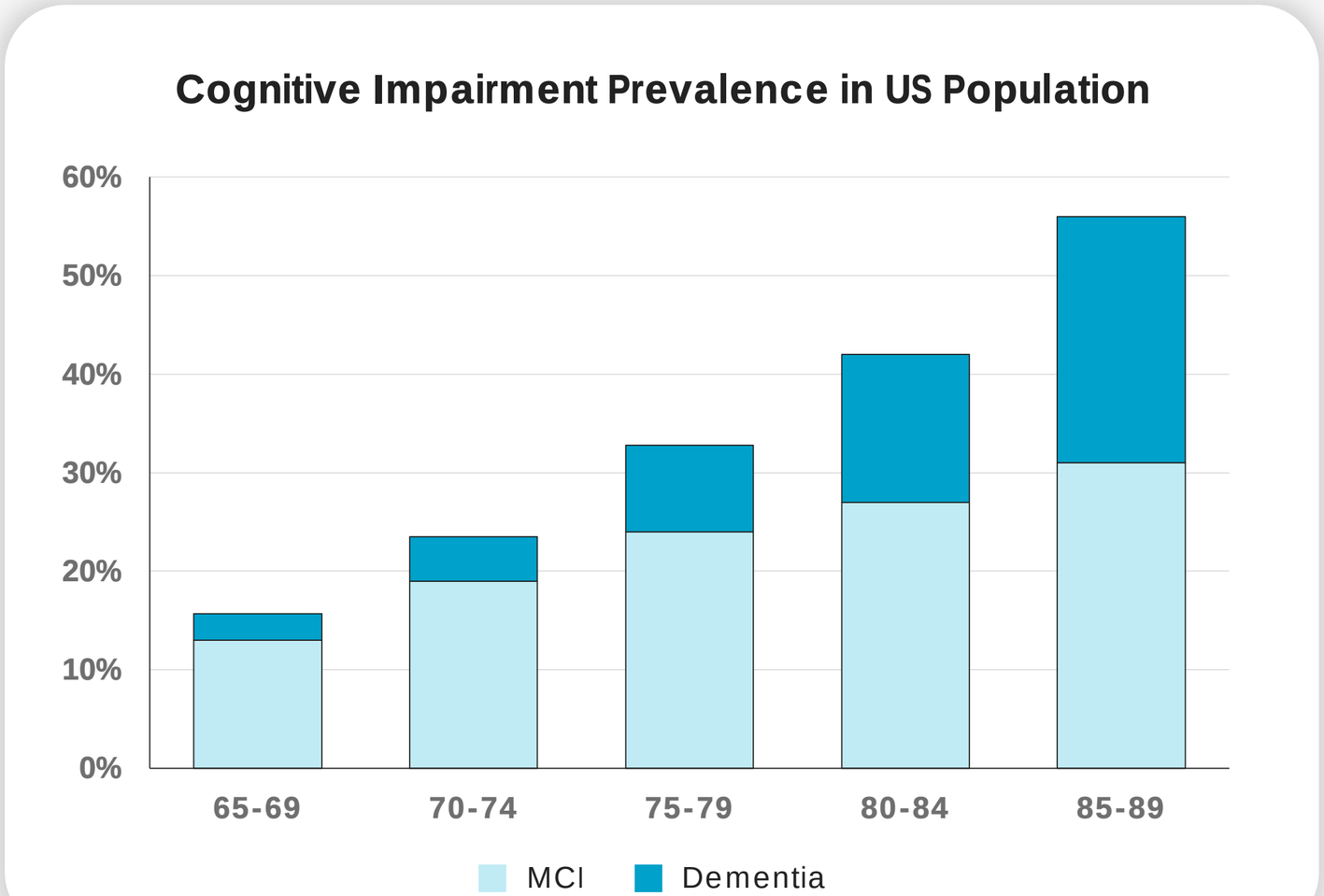
one medical

Thank you

SAVONIX

SOA Virtual Health

Cognitive impairment & Dementia are a big problem



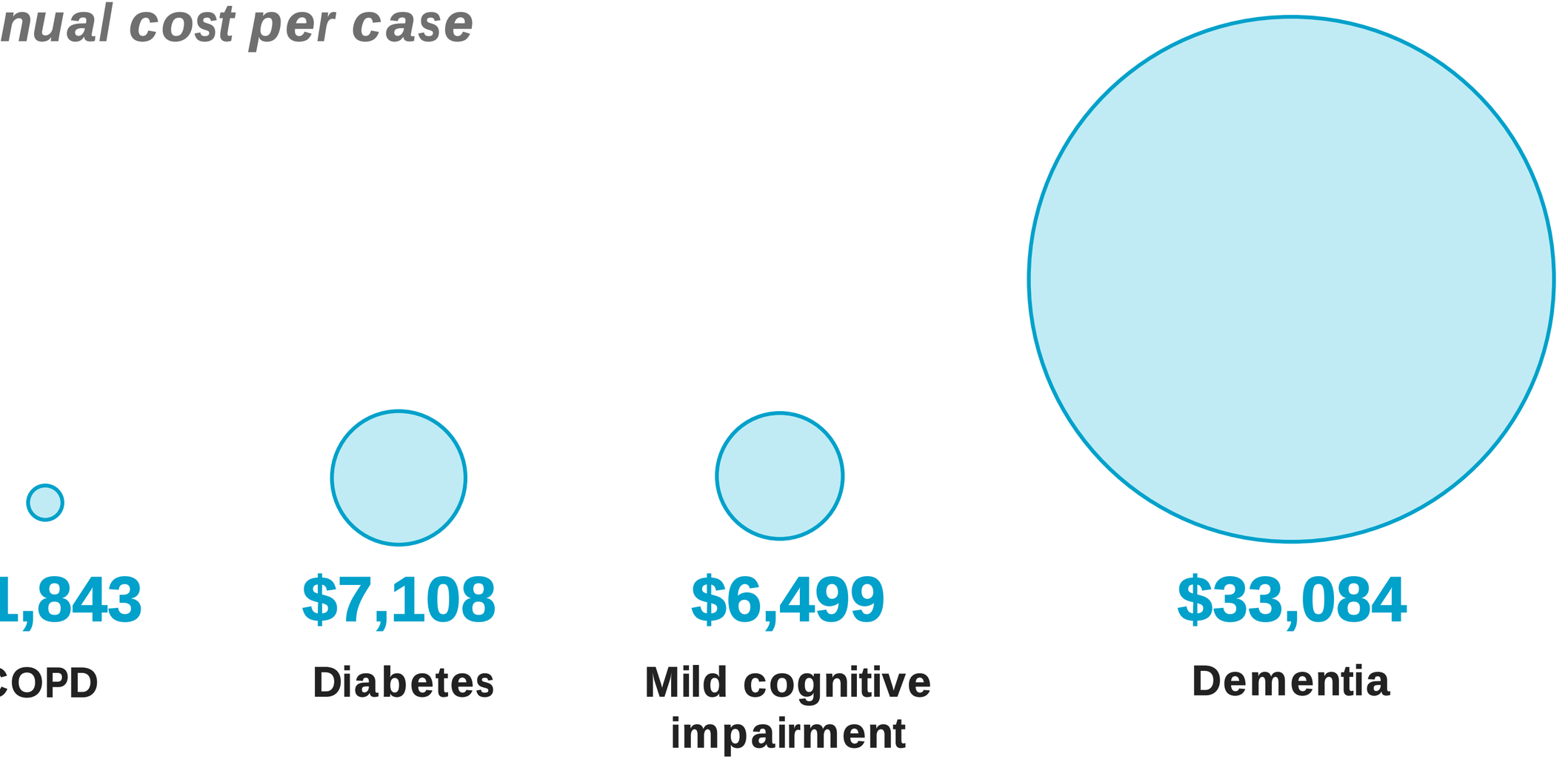
12 million Americans have some form of cognitive impairment.

80% have not been diagnosed.

(Knopman et al., 2016) (US Census, 2010) (Lin et al., 2013)

Dementia is an expensive disease

Annual cost per case



$1,843
COPD

$7,108
Diabetes

$6,499
Mild cognitive impairment

$33,084
Dementia

(Zhu et al., 2013) (Waters & Graf, 2018)

Med adherence depends on cognitive health

COPD

Cognitive impairment increases risk of not completing pulmonary rehabilitation by 2x.

Diabetes

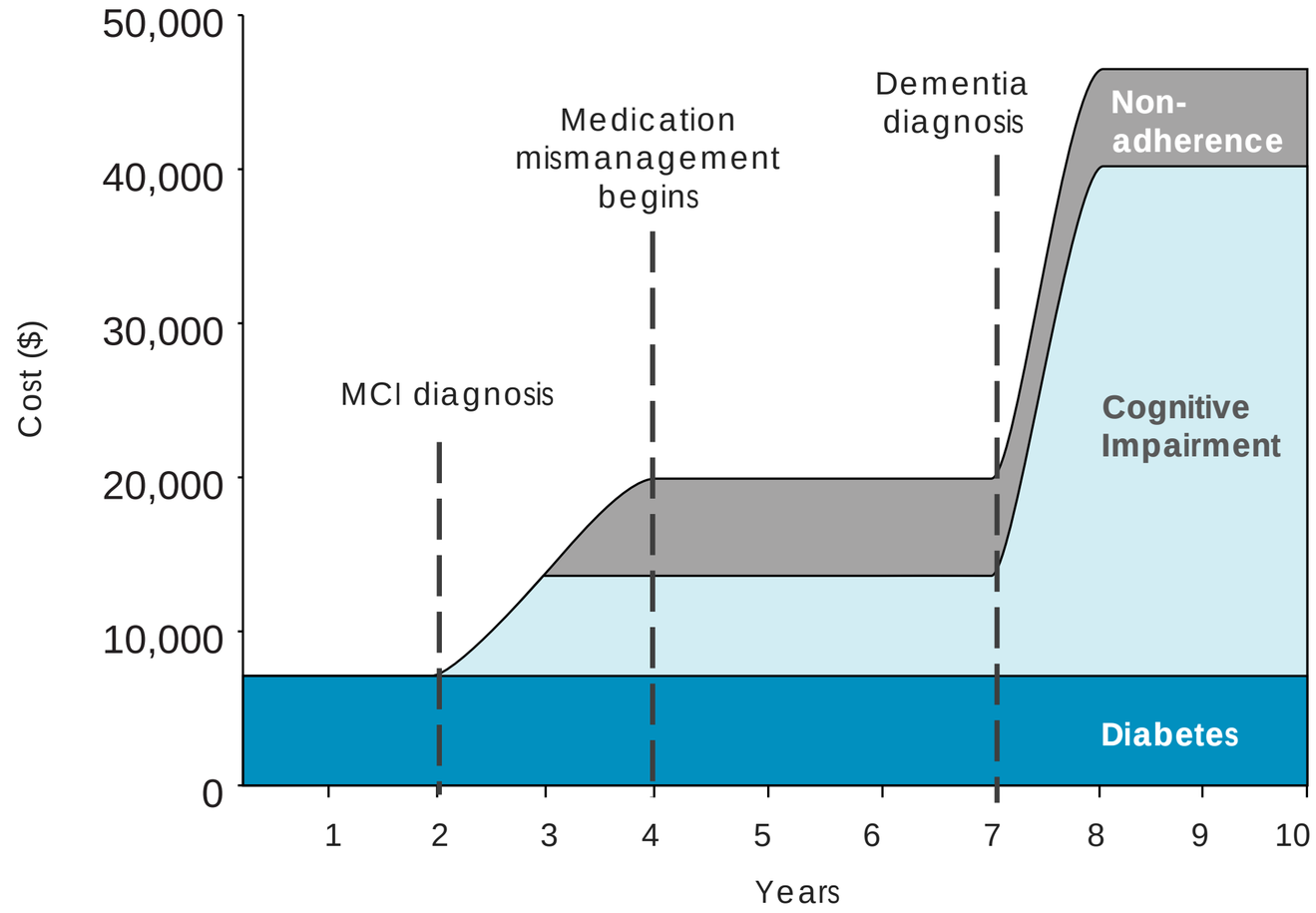
47% of self-management fails – cognition is a top three predictor.

Heart Disease

Heart disease increases risk of cognitive impairment by 45%.

(Cleutiens et al., 2017) (Rosen et al., 2017) (Deckers et al,, 2017)

The Annual Cost of Diabetes and Cognitive Impairment Over Time



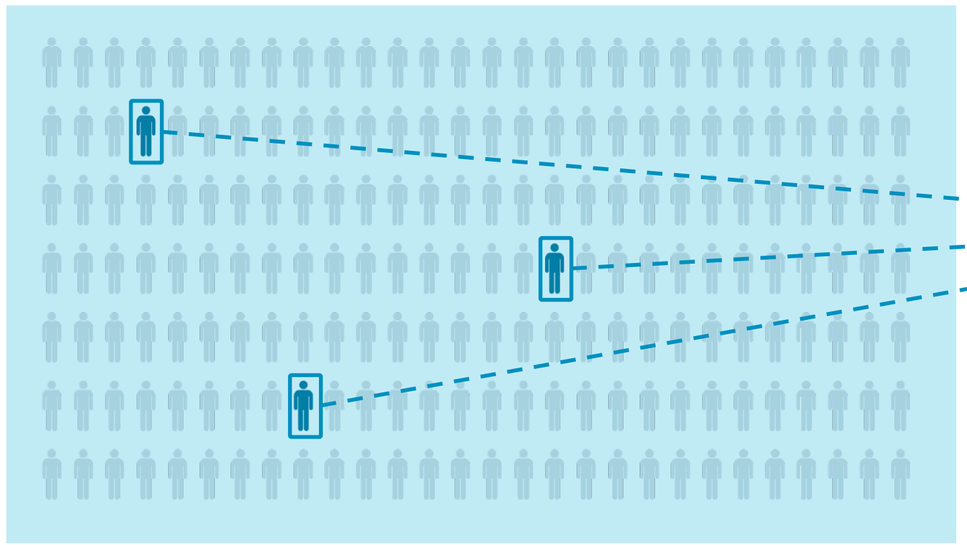
Healthcare costs spiral when diabetes is comorbid with cognitive impairment.

(Cutler et al., 2018) (Zhu et al., 2013) (Waters & Graf, 2018)

Access population level data around cognition and behavior

Build precision risk models based on the data of your members

Total US Population



Aggregate Population Stats

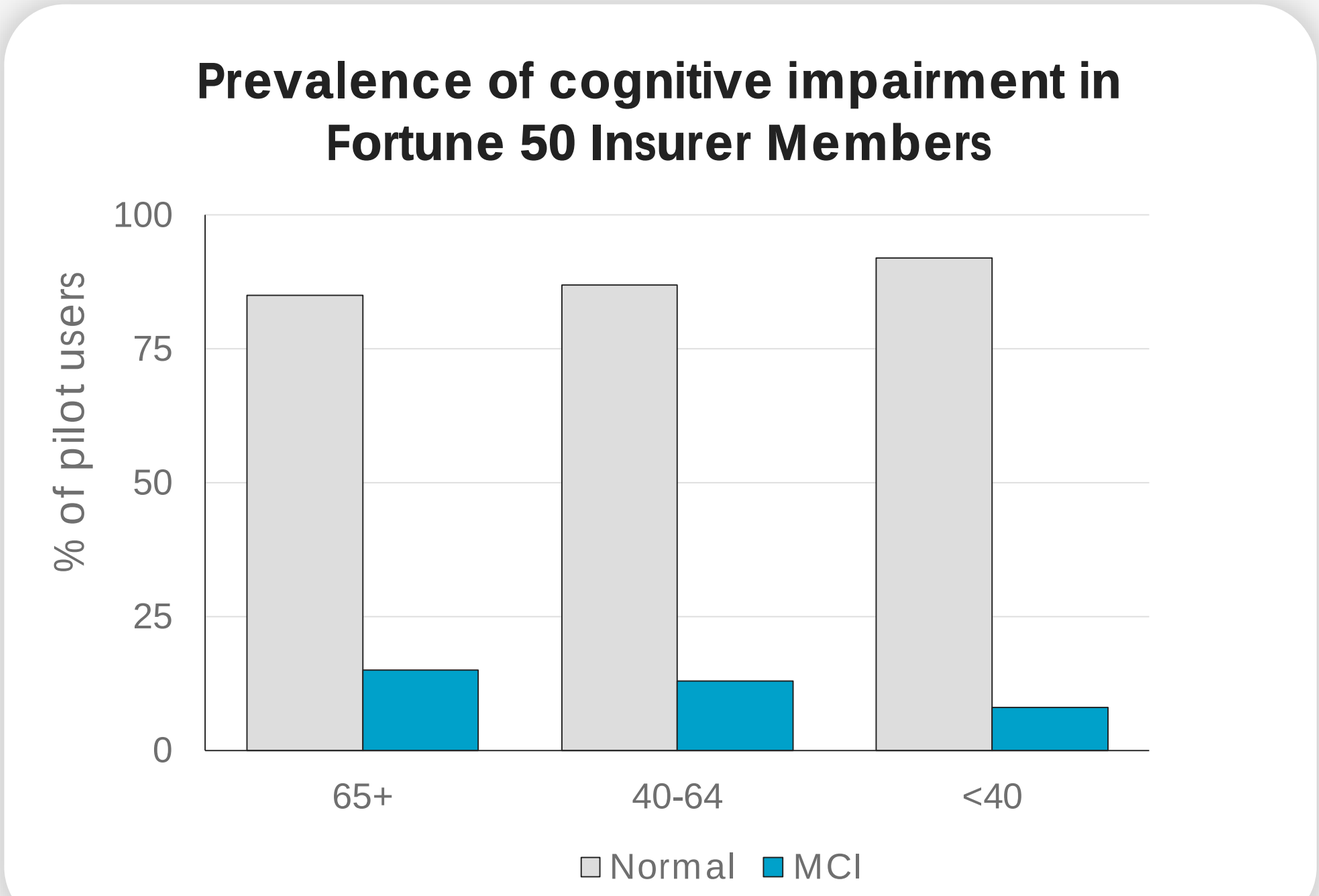
- *20% cognitive impairment*
- *50% exercise regularly*
- *40% smoke*

Insurance Company Member Population

Member Population Stats

- *40% cognitive impairment*
- *20% exercise regularly*
- *60% smoke*

Case Study Fortune 50 Insurer: Forecasting MCI and Dementia Claims Risk



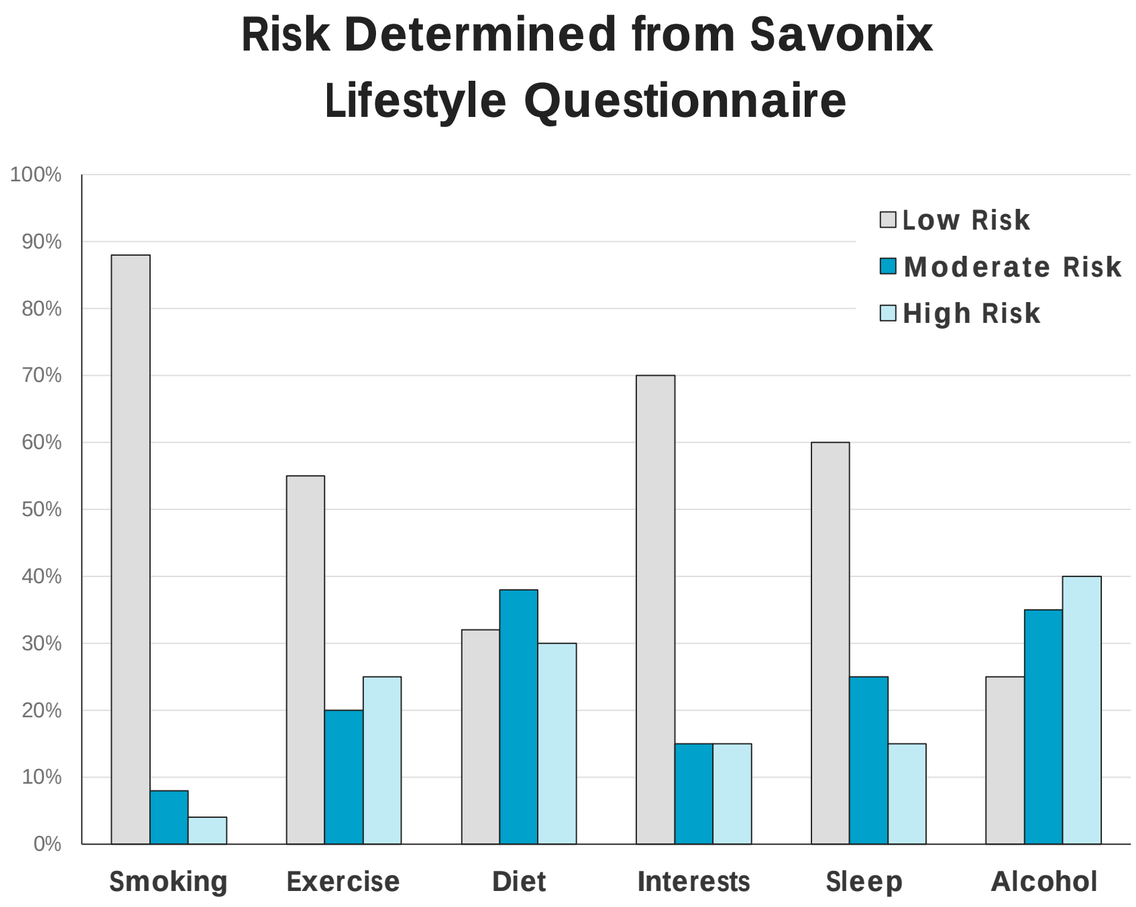
Cognitive impairment rate is lower than average in Fortune 50 Insurer population.

Prevalence of MCI for 65+

- **National population: 21%**
- **Insurer population: 15%**

(Knopman et al., 2016

Improve risk models with cognitive data plus lifestyle risk factor data



By understanding a population's lifestyle factors risk, we gain more insight into dementia risk.

The risk of dementia increases by

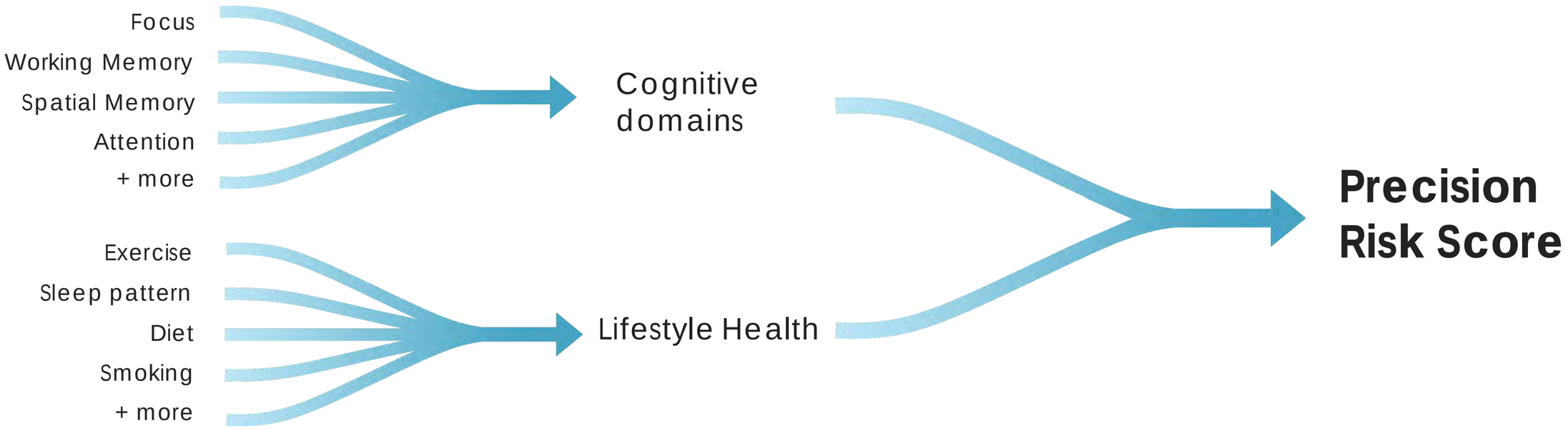
+ 45% for smokers
+ 23% for poor sleep
+ 10% for heavy drinkers

The risk of dementia decreases by

-26% for large social support networks
-40% for healthy diet
-32% for regular exercise

(Glei et al., 2005) (WHO, 2014) (Scarmeas et al., 2006) (Larson et al., 2006) (Spira et al., 2014) (Xu et al., 2017)

A single Score to predict Dementia Claims Risk



Access Medicare Reimbursement for dementia diagnoses

CMS has significantly increased reimbursement by adding a dementia risk adjustment factor

$931	x	**0.45**	=	**$418 PMPM**
Base county rate 2020		HCC 51/52 risk-adjusted factor		

The financial win is considerable

ASSUMPTIONS	**1M** users	**5%** completion rate*	**25%** undiagnosed cognitive impairment	**$418** avg increase PMPM

12,500 undiagnosed individuals with dementia

x

$5,016 annual average individual increase

=

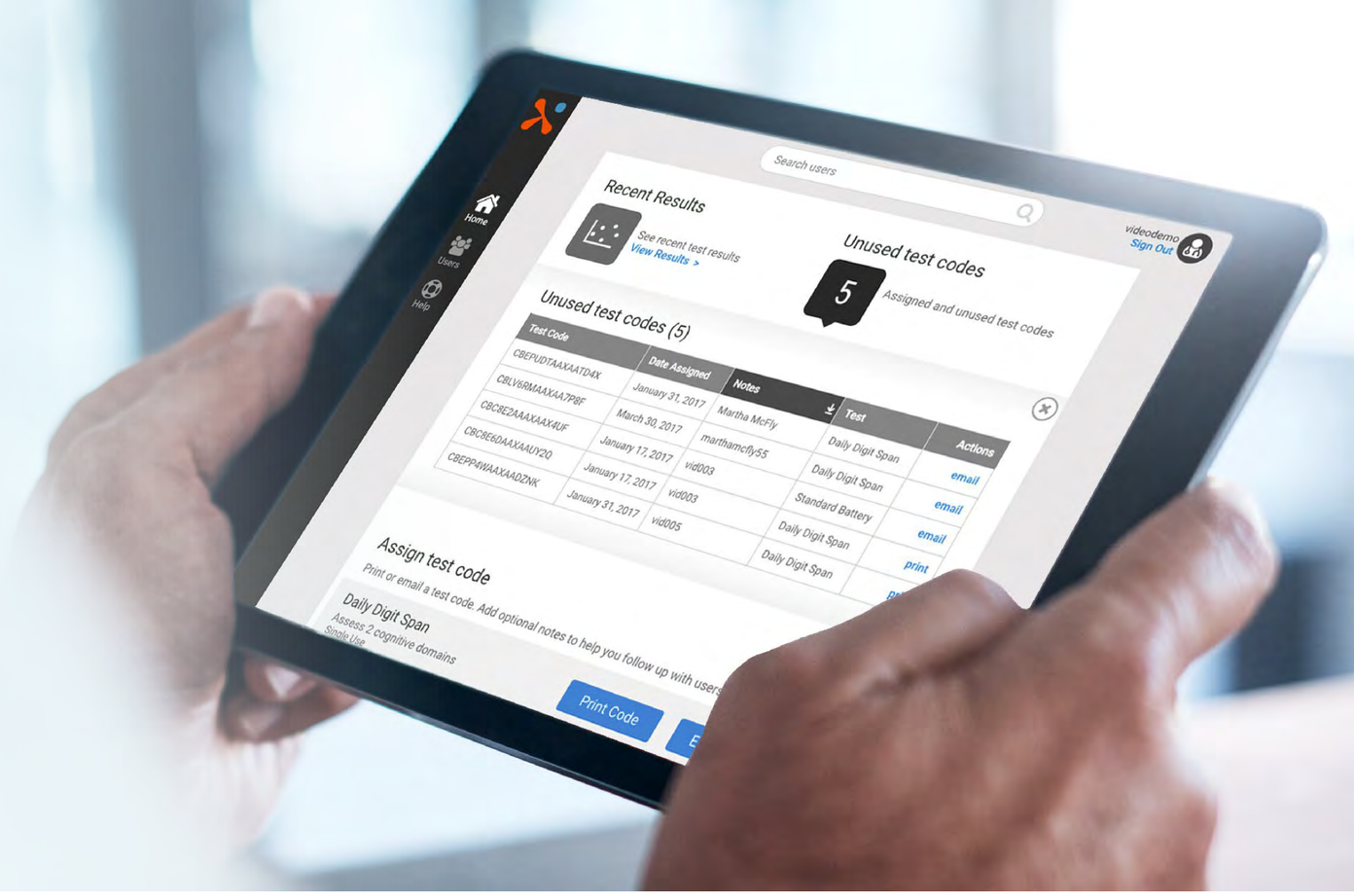
$62.7M
Increased reimbursement PER YEAR

*Factors affecting completion rate include mail, nurse interaction, email etc.

The Savonix solution

An end-to-end solution for MCI and Dementia Risk

Why measure with Savonix?



Data Insights

We provide in-depth population-level analyses across cognitive, demographic, and behavioral dimensions.

Sensitivity

Our platform distinguishes between neuro-normal cognition, mild cognitive impairment and Alzheimer's disease.

Accessibility

The Savonix Assessment can be taken from anywhere in the world at any point in time with a mobile device.

Consumers want answers about cognitive health

AARP® surveys tell us:

- **87%** of adults over 50 rank cognitive health as a top three concern.
- **75%** of those over the age of 40 would like access to early screening and information about how to prevent dementia.

A survey from a Fortune 50 Insurer tells us:

- **57%** said they would use Savonix, based on a description and screenshots.
- **40%** said they would pay to use Savonix.

Consumers readily engage with Savonix

Case Study with a large self-employed insurer

- Total employees at company: **655**
- Median age: **49**
- **80.2%** chose to engage with the Savonix assessment
- Of those that engaged:
  - **100%** completed the cognitive assessment
  - **93%** completed the lifestyle assessment

We find cognitive impairment in your population

Savonix unlocks your ability to

- Identify those at risk in your population
- Create a precision risk model with cognitive and lifestyle data

So you can

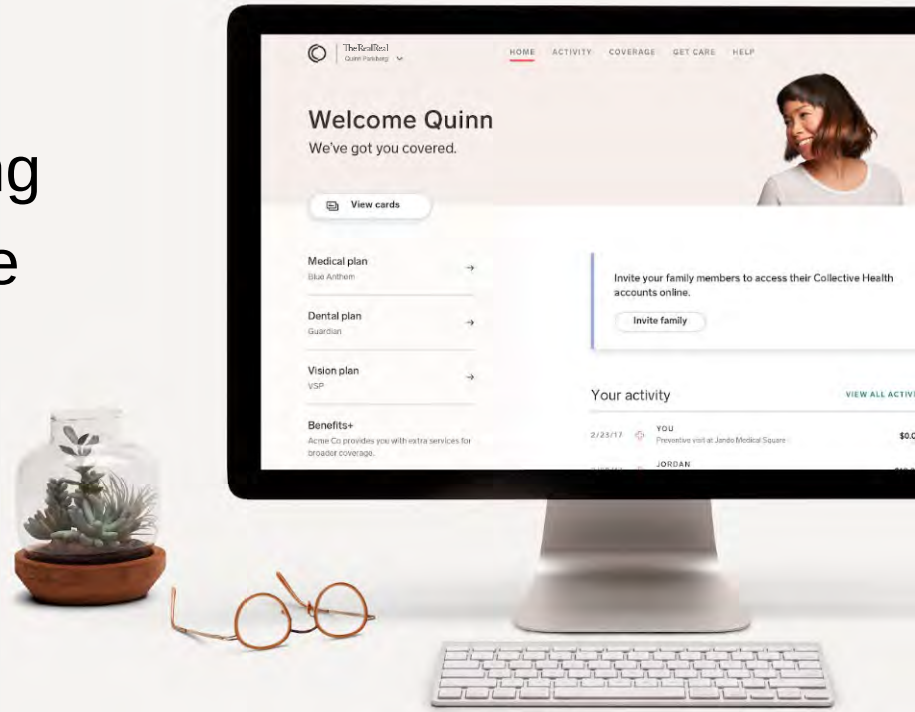
- Improve your underwriting efficiencies
- Drive informed novel product creation
- Triage your resources for those in need

SAVONIX

SOA Virtual Health

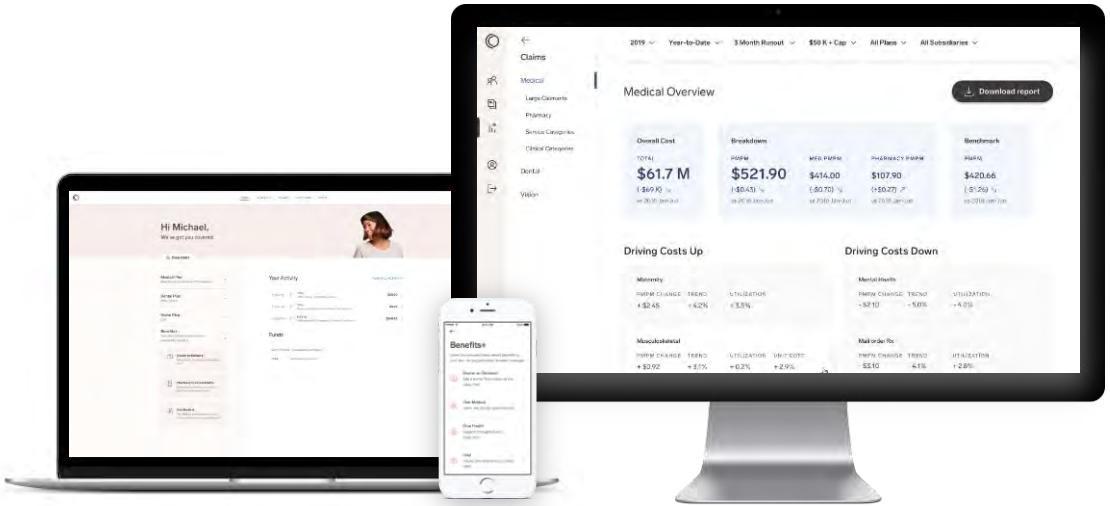
Collective Health

2020 SOA Health Virtual Meeting
Silicon Valley Innovators Update



June 9, 2020

WORKFORCE HEALTH MANAGEMENT SYSTEM



Connect

Networks | Systems | Programs

Run

Adjudication | Eligibility | Payments

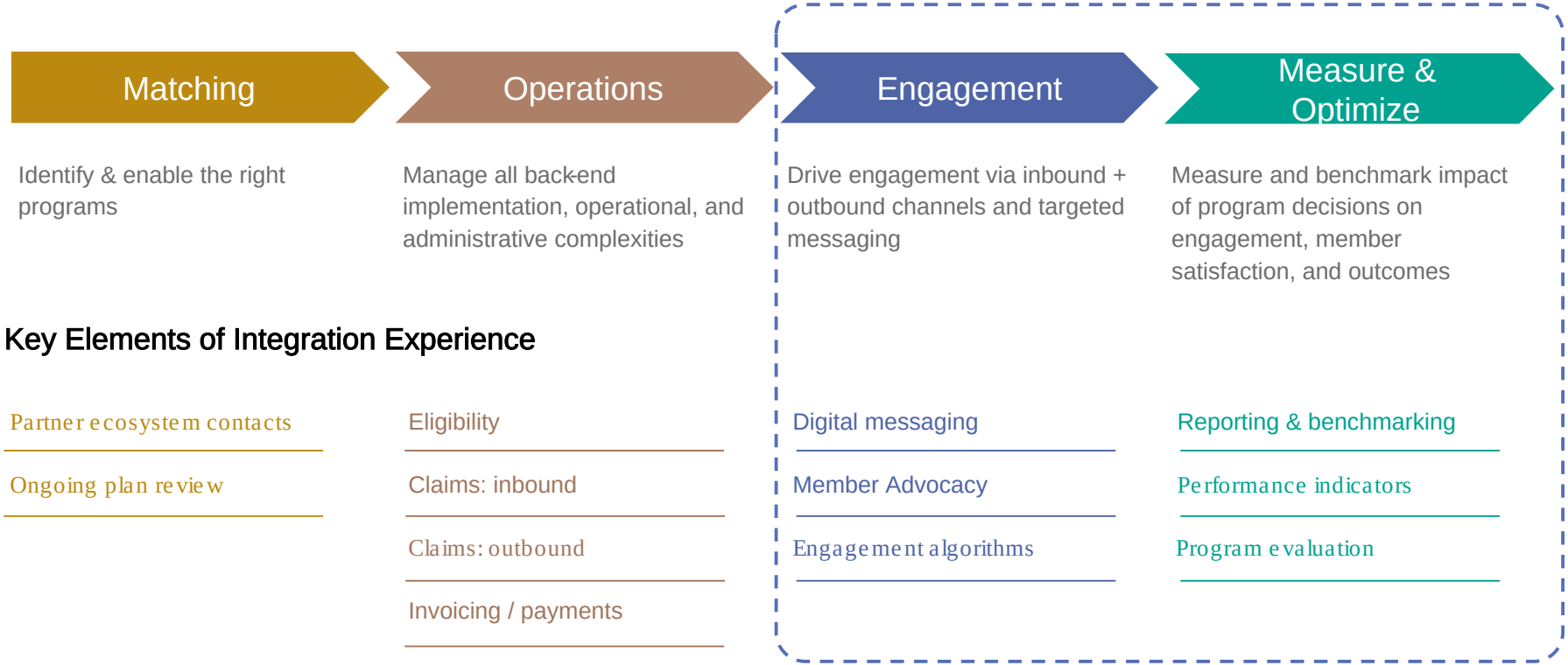
Engage

Mobile + Web | Advocacy | Messaging

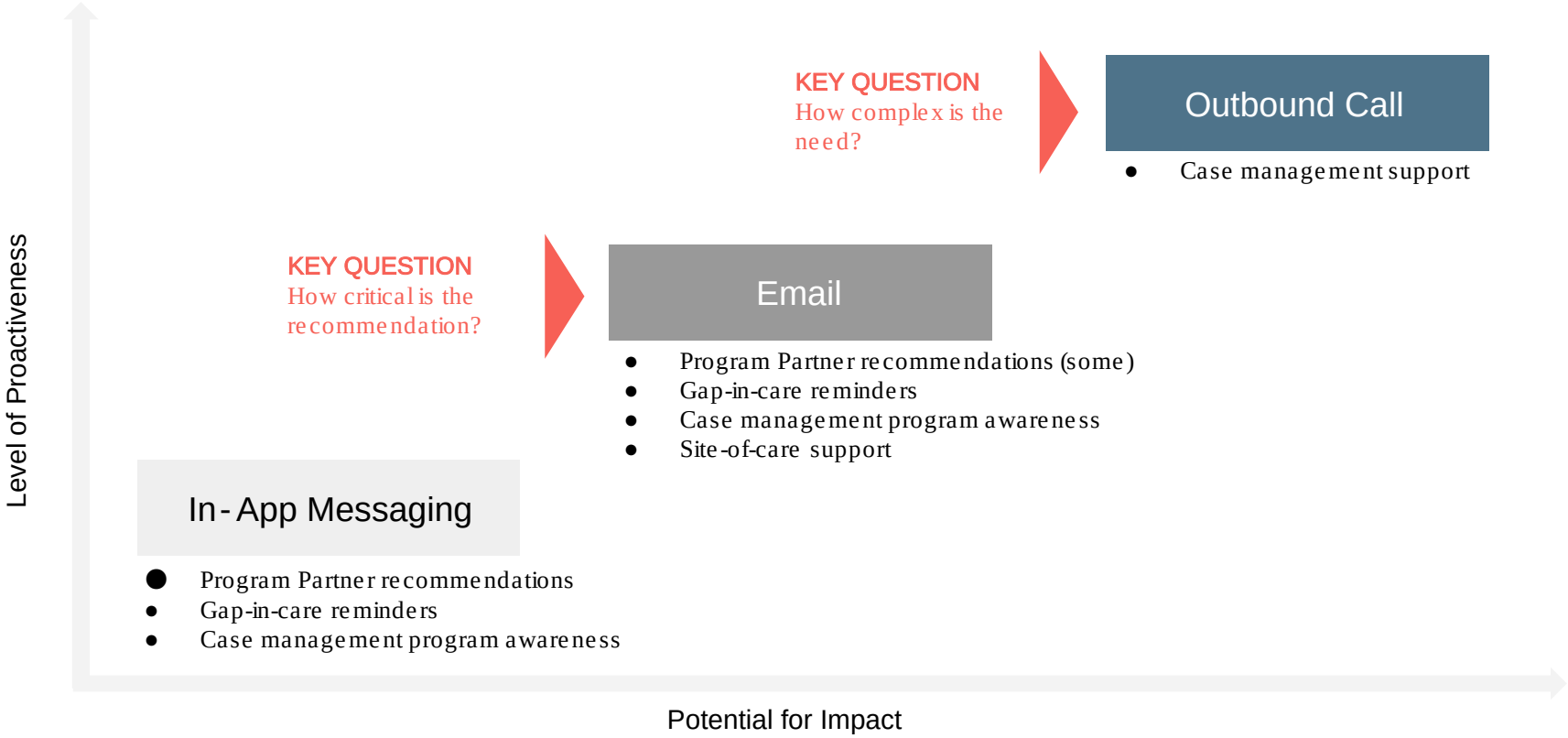
Optimize

Dashboards | Reporting | Insights

Integration means more than “adding a link”



Level of engagement tailored to match the member need



Performance measurement: key indicators

Diabetes eye exam adherence

Diabetes is a complex group of diseases marked by high blood glucose (blood sugar) due to the body's inability to make or use insulin. Left unmanaged, diabetes can lead to serious complications, including heart disease, stroke, hypertension, blindness, kidney disease, diseases of the nervous system, amputations and premature death.

According to HEDIS guidelines, adults 18–75 years of age with diabetes (type 1 and type 2) should have the following tests performed anually:

- Hemoglobin A1c (HbA1c) testing
- Eye exam

98.2%
Adherence to Diabetes Eye Exams

49.0%

Breast cancer screening adherence

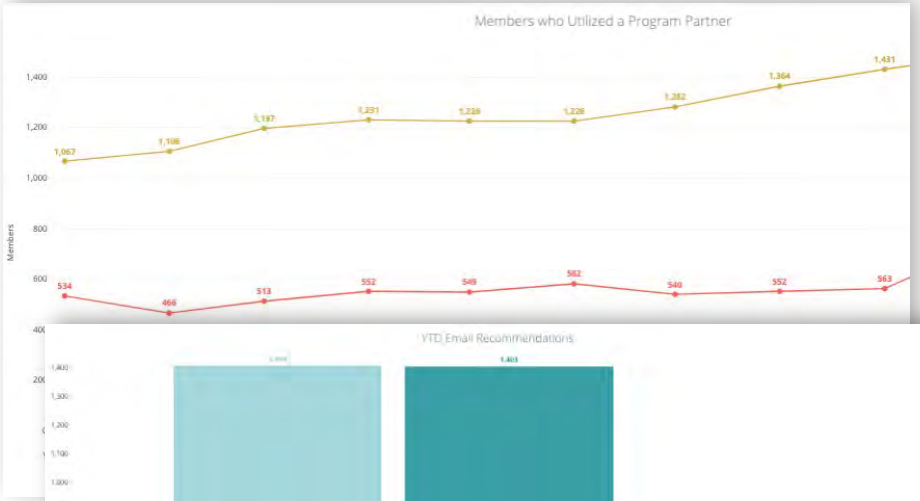
Aside from some forms of skin cancer, breast cancer is the most common cancer among American women, regardless of race or ethnicity. Screening can improve outcomes: Early detection reduces the risk of dying from breast cancer and can lead to a greater range of treatment options and lower health care costs.

According to HEDIS guidelines, women 50–74 years of age should have at least one mammogram screening for breast cancer every two years.

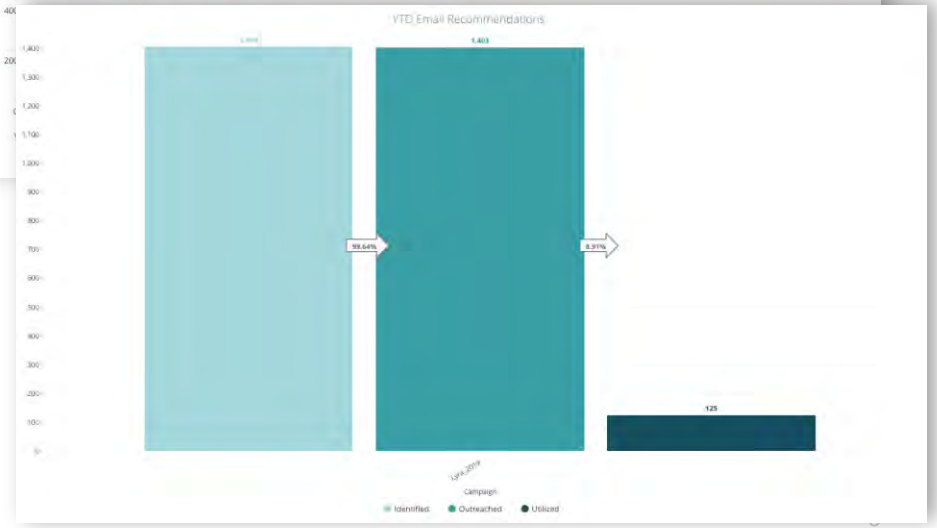
69.6%
Adherence to Breast Cancer Screening

70.2%
HEDIS Benchmark

Point solution program utilization



Personalized recommendations



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Performance measurement: healthcare cost trend

Weighted average annualized trend since inception: 2.9%

4.2M+ member months (2016- 2019)

Actuarial methodology controls for exogenous factors

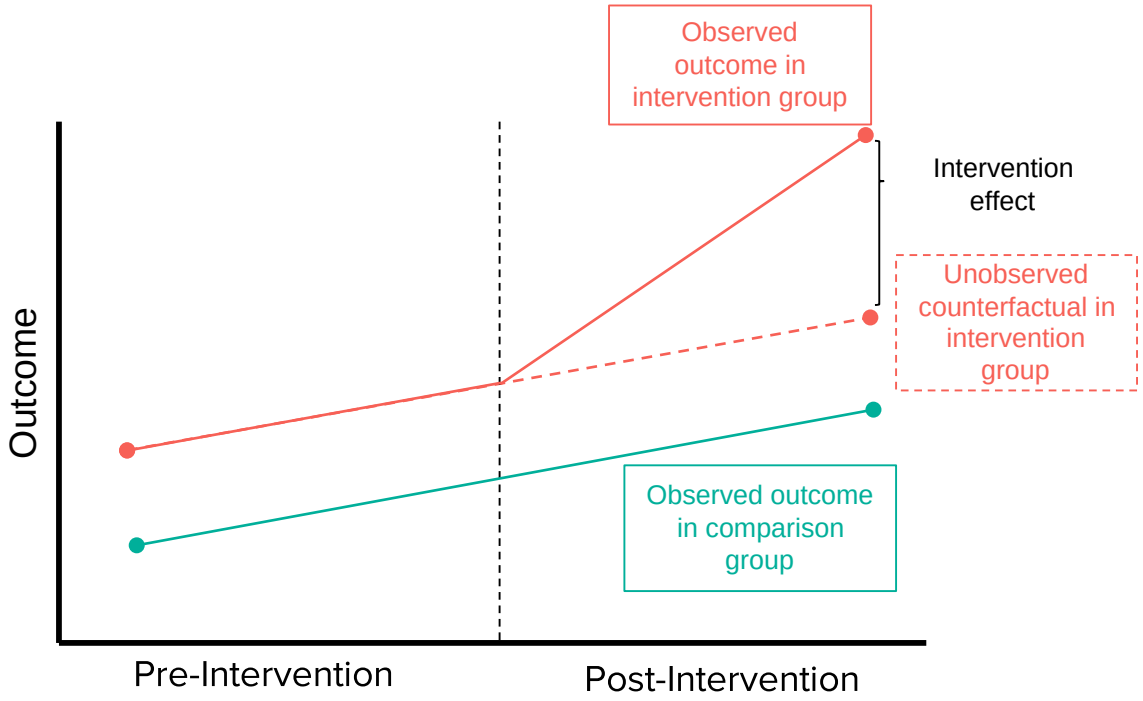
Weak causal inference

Collective Health Trend Methodology Components
Clients in Year 2+ with Collective Health Only
Allowed Medical Claim Costs
High Cost Claimant Exclusion
Demographic Mix Adjustment
Geographic Mix Adjustment
Induced Utilization Factor Adjustment
Net of Network Change Impact

Performance measurement: causal inference

Causal inference approaches for observational healthcare studies [1]

- Propensity Score Matching
- Synthetic Control Approach
- Regression Discontinuity
- Difference in Differences Regression



1 For further reading: Evaluating the Health Impact of Large-Scale Public Policy Changes: Classical and Novel Approaches. Basu, Meghani, Siddiqi. Annual Review of Public Health. Vol. 38:351-370 (Volume publication date March 2017)
Utilization and Cost of an Employer-Sponsored Comprehensive Primary Care Delivery Model. Base, Zhang, Gilmore et. al., JAMA Open Network, Vol. 3, No. 4, April 30, 2020

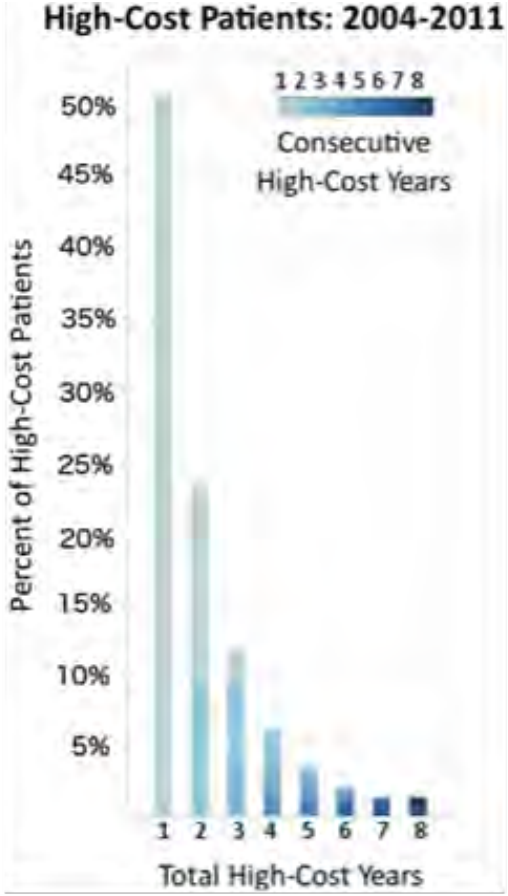
Proprietary and confidential

Case management risk identification

Problem statement : patients outreached by case management programs are not engaged before incurring the majority of their healthcare expenditures

Most high cost claimants' healthcare expenditures occur during a one year period or less

Risk identification algorithm design objective: **identify patients before their highest cost episodes**



Suzanne Tamang et al. BMJ Open 2017;7:e011580

Collective Health risk identification model

“Traditional” cost prediction tools

- Diagnoses
- Rx Prescriptions

+

Alternative prediction data

- Social determinants of care
- Provider cost data

+

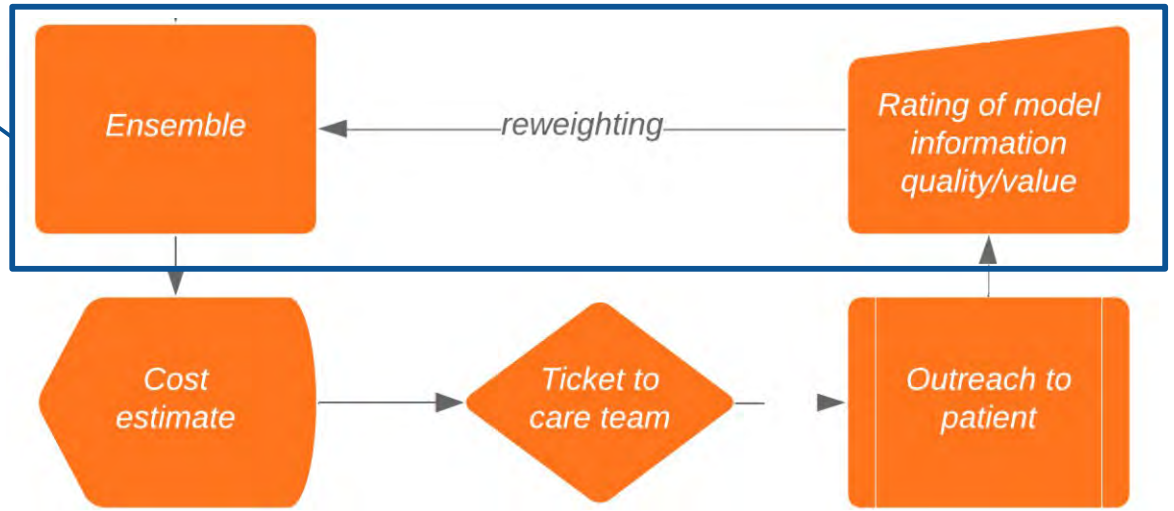
Ensemble model

- Generalized linear model
- + Machine learning ensemble
- + Gradient boosted meta-learner

+

Human feedback

- Meta-learner re-weighted using feedback from clinical care team



Irvin, J.A., Kondrich, A.A., Ko, M*et al.* Incorporating machine learning and social determinants of health indicators into prospective risk adjustment for health plan payments. *BMC Public Health* 20, 608 (2020). https://doi.org/10.1186/s12889-020-08735-0

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Evaluating Collective Health's risk identification model

Performance Measure	Measured Result
R^2	38.7%
Predictive Ratio Common conditions	94.8% - 99.6%
AUC (C-Stat)	71.6%

Peer-reviewed: Winner of *The New England Journal of Medicine's* SPRINT Data Challenge (just for hypertension)

Irvin, J.A., Kondrich, A.A., Ko, M. *et al.* Incorporating machine learning and social determinants of health indicators into prospective risk adjustment for health plan payments. *BMC Public Health* 20, 608 (2020). https://doi.org/10.1186/s12889-020-08735-0

Basu S, et al. *Lancet*. 2017;5(10):788–798. doi:10.1016/S2213-8587(17)30221-8

Basu S, et al. *Diabetes Care*. 2018;41(3):586–595. doi:10.2337/dc17-2002

Yadlowsky S, et al. *Ann Intern Med*. 2018;169:20–29. doi: 10.7326/M17-3011

2020 HEALTH VIRTUAL MEETING

Q & A

Session 6 , An Update from the Leaders of Some of the most Innovative Companies in Silicon Valley

June 9, 2020

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Questions for Our Panel

- Mylea Charval, Ph.D. CEO and Founder, Savonix
  - savonix.com
- Raj Behal, MD, MPH, Chief Quality Officer, One Medical
  - onemedical.com
- Dave Sotelo, FSA, MAAA, Actuarial Manager, Collective Health
  - collectivehealth.com

SOA: ”Get Plugged In” Podcasts Available

- February: Lapetus and Longevity
- March: Traffk and Tech in Underwriting
- April: DeepScribe and Telemedicine Today
- May: Slope and Modeling

Upcoming SOA Events

- “Inside InsurTech” webcasts:
  - July 15: Tools for the Future
  - September 30: Aging Population
  - November 4: Distribution & Customer Experience
- The fully virtual ElderTech Summit November 9 &10
  - dementia and Alzheimer’s care, technology to support aging in place,
  - telemedicine at home and at facilities,
  - tech and innovation to address social isolation and mental health,

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