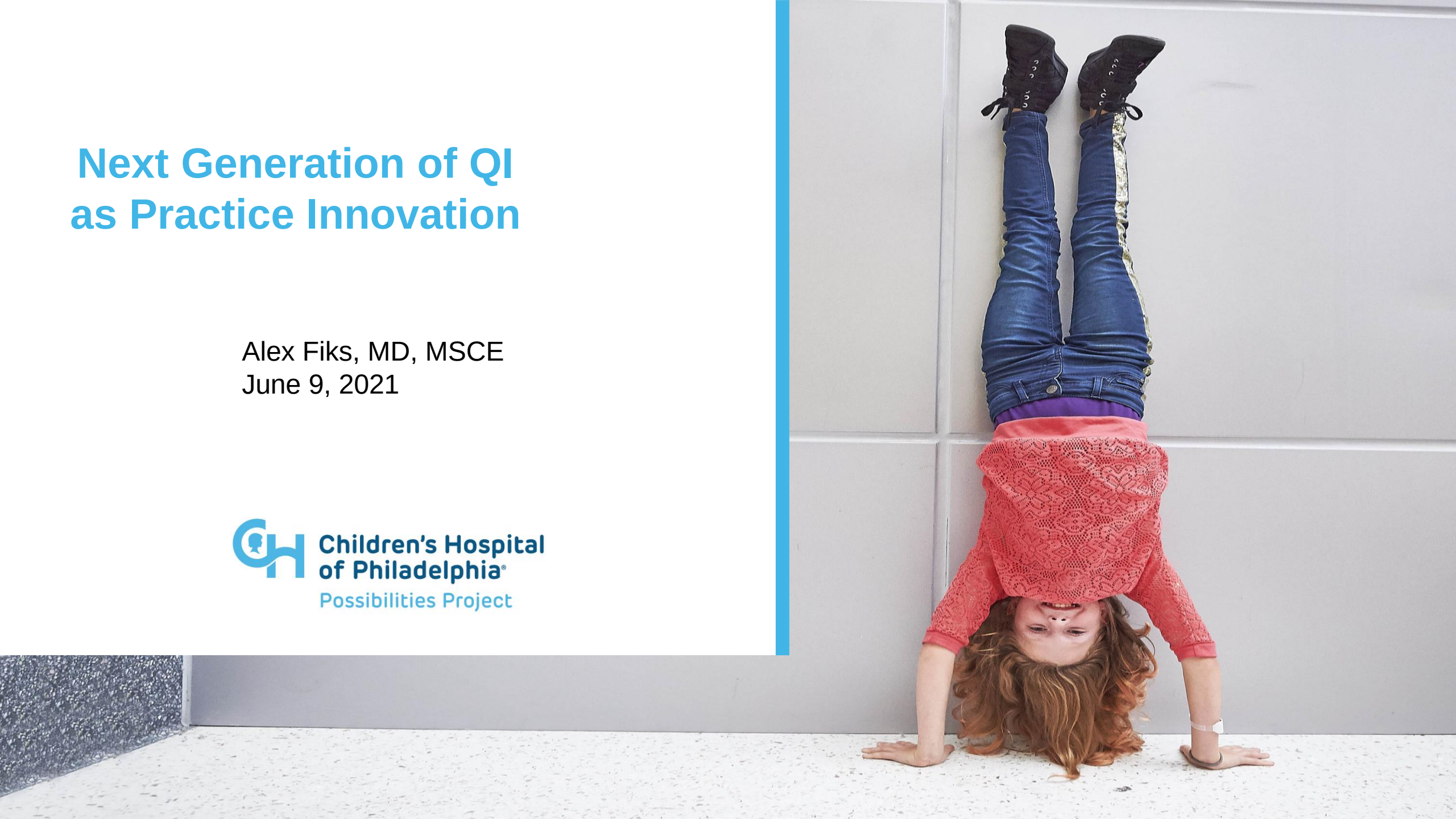
Next Generation of QI as Practice Innovation

Alex Fiks, MD, MSCE
June 9, 2021

Children's Hospital of Philadelphia®
Possibilities Project



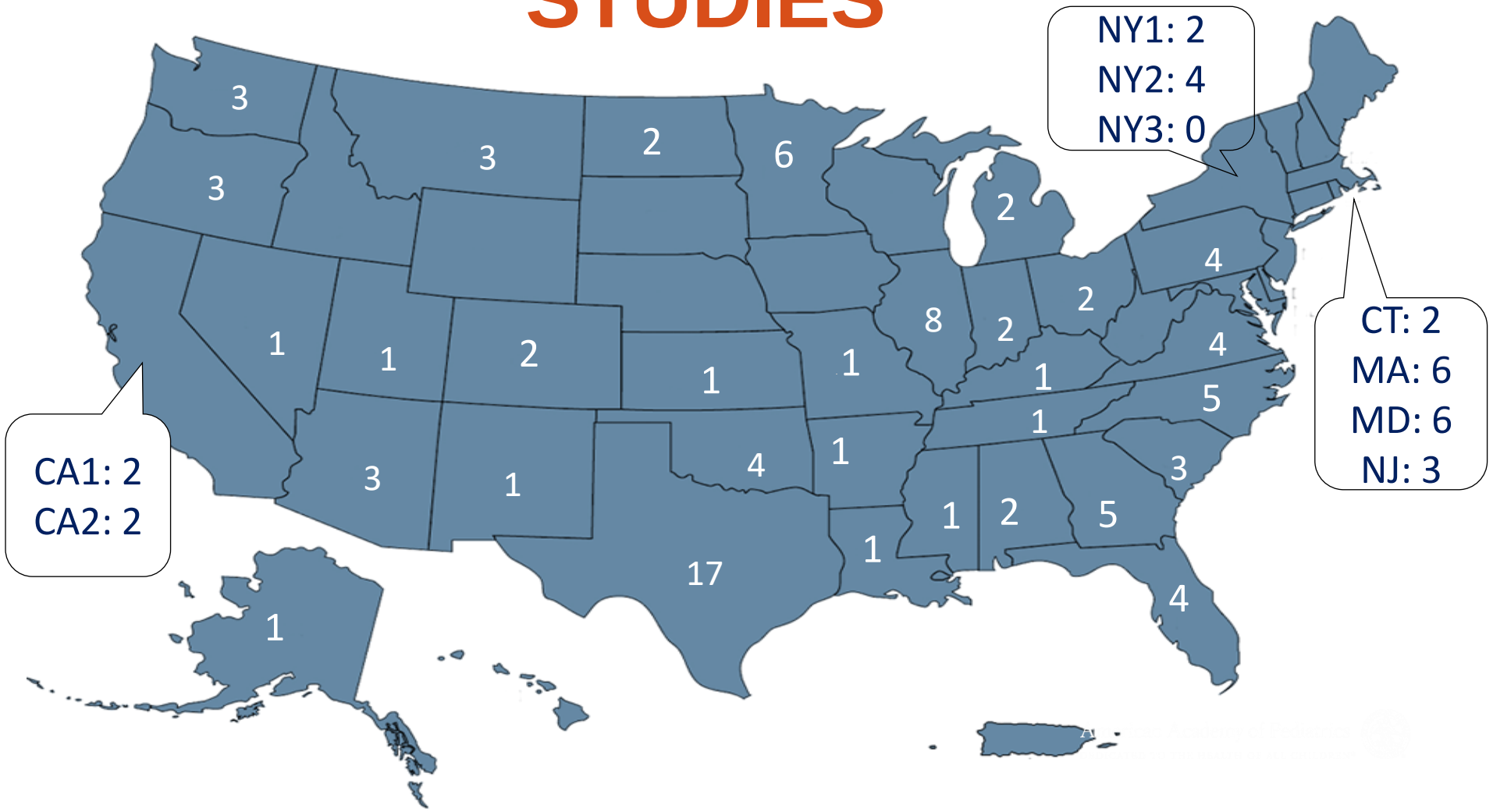
Learning Objectives

1. Understand how an innovation framework can be used to identify, test and scale opportunities that drive improved healthcare
2. Identify challenges in driving innovation in primary care
3. Recognize the value of multidisciplinary collaboration and consultation, including data analytics and practice improvement efforts, in the context of innovation

Innovation is Everywhere

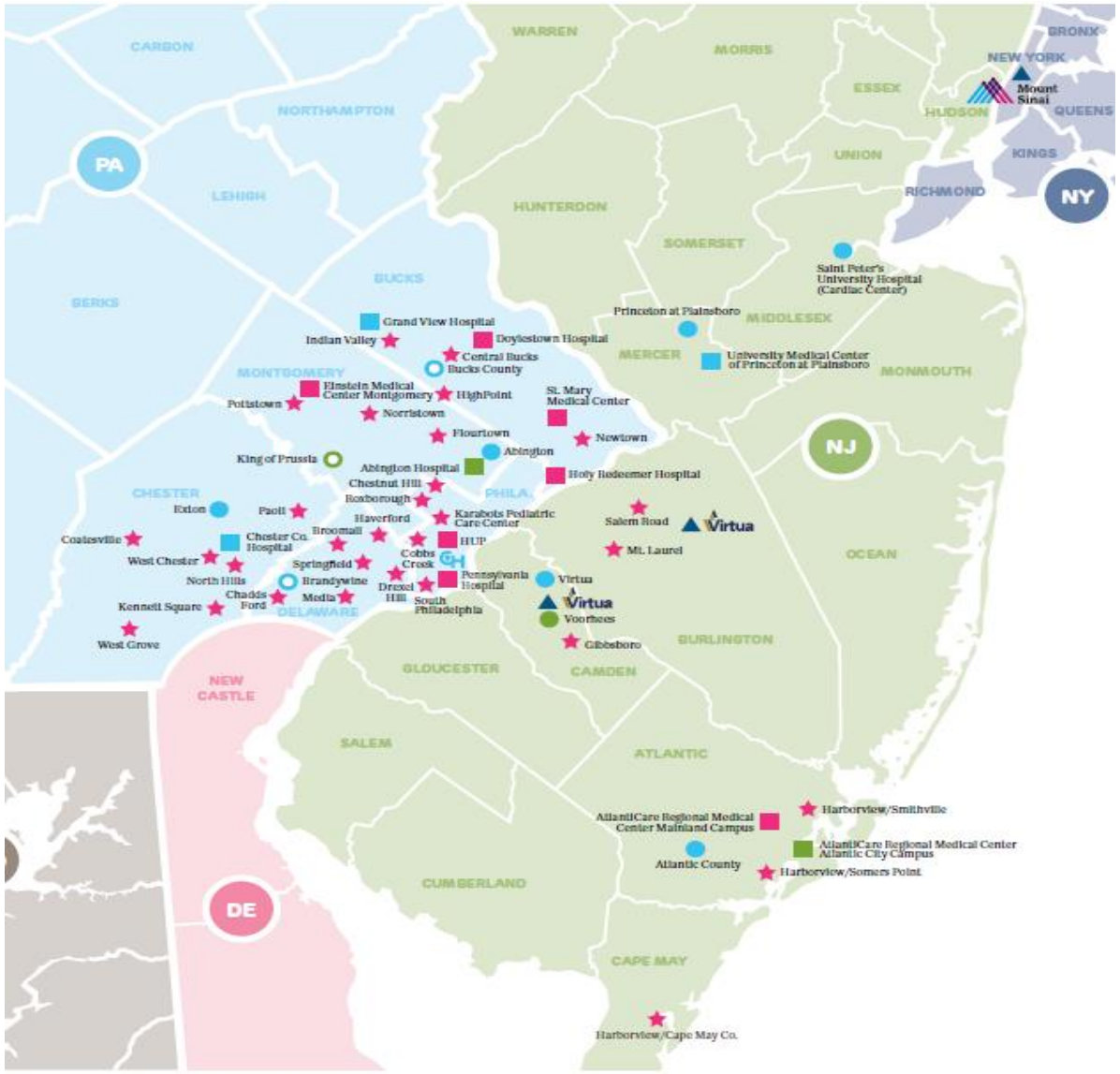
https://www.youtube.com/watch?v=W6DE3pQyuKU

UNIQUE PRACTICES (N=122) IN CURRENT PROS STUDIES

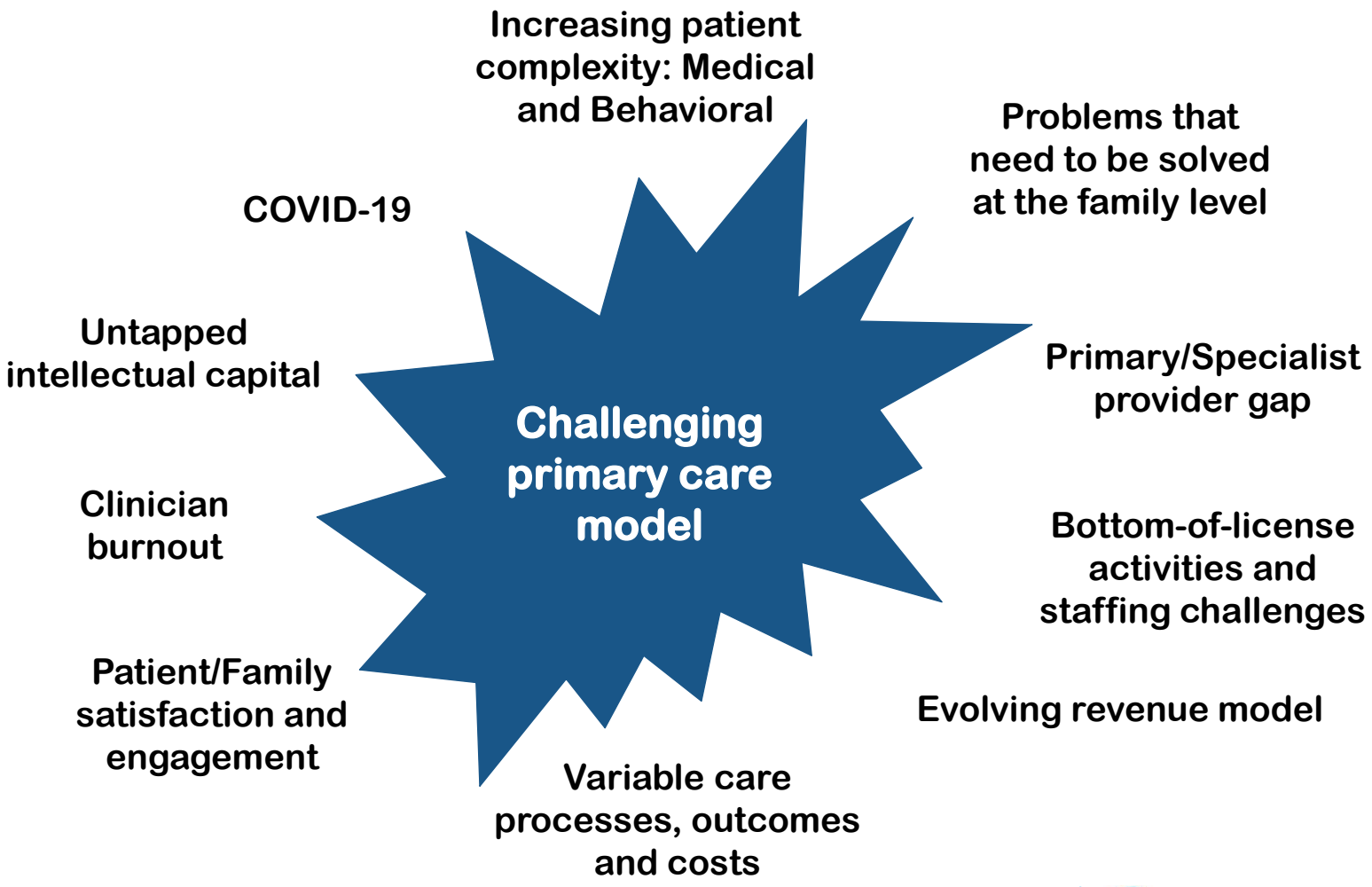


Context: CHOP Care Network

- Includes ~31 primary care sites embedded in local communities (includes 3 urban resident continuity sites)
- Sites partner with CHOP's After Hours call center, home care and urgent care programs as well as community organizations
- ~205 physicians and 41 nurse practitioners
  - ~250,000 children
  - ~750,000 visits/year
- Building integrated behavioral health capacity throughout the network, partnering to expand care management services, and growing quality improvement efforts
- Now, increasingly focused on innovation



Context: Primary Care is a Challenging Environment to Change

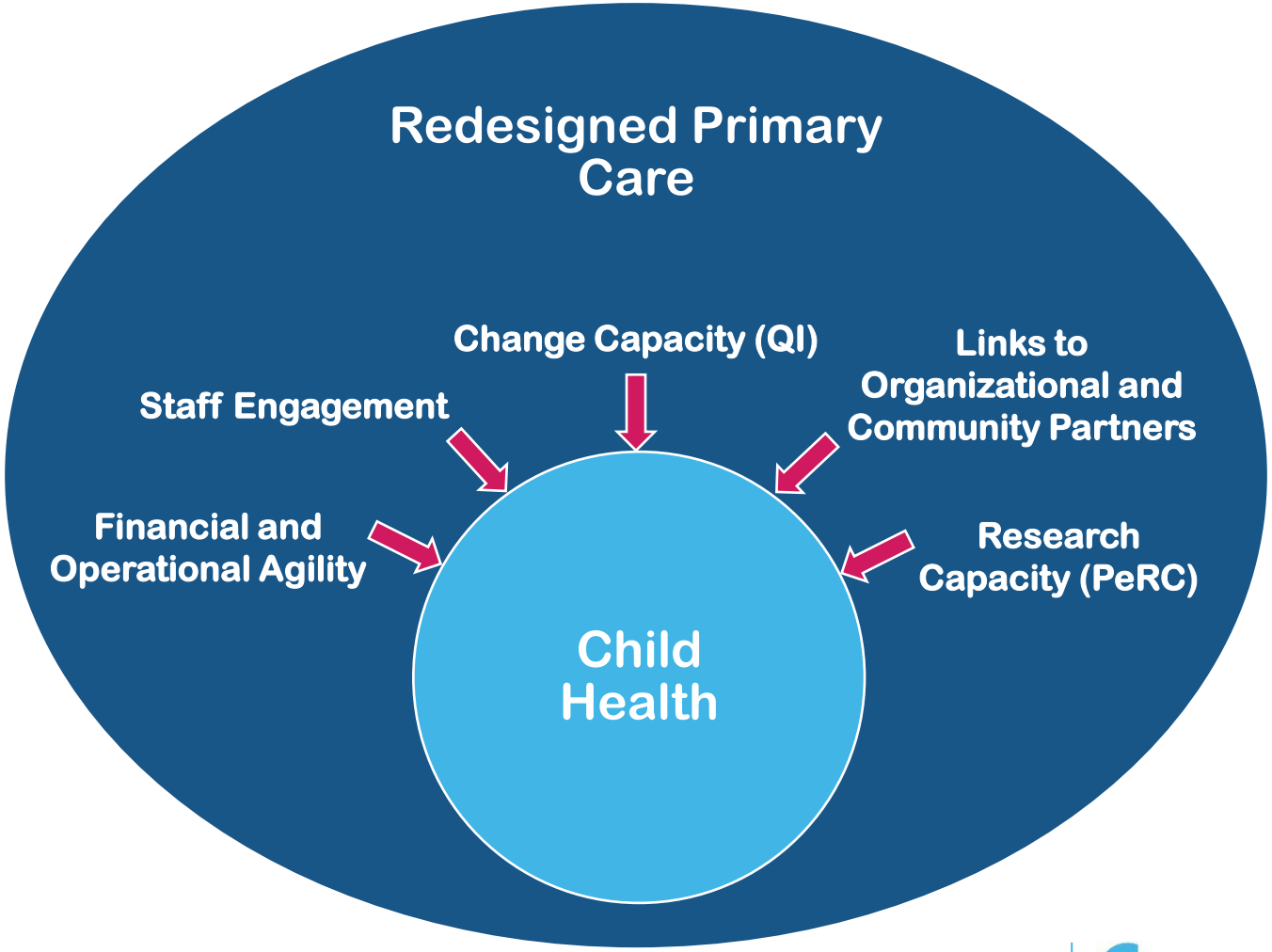


Goals of the Possibilities Project, Our Own Primary Care Innovation Program (from 2017)

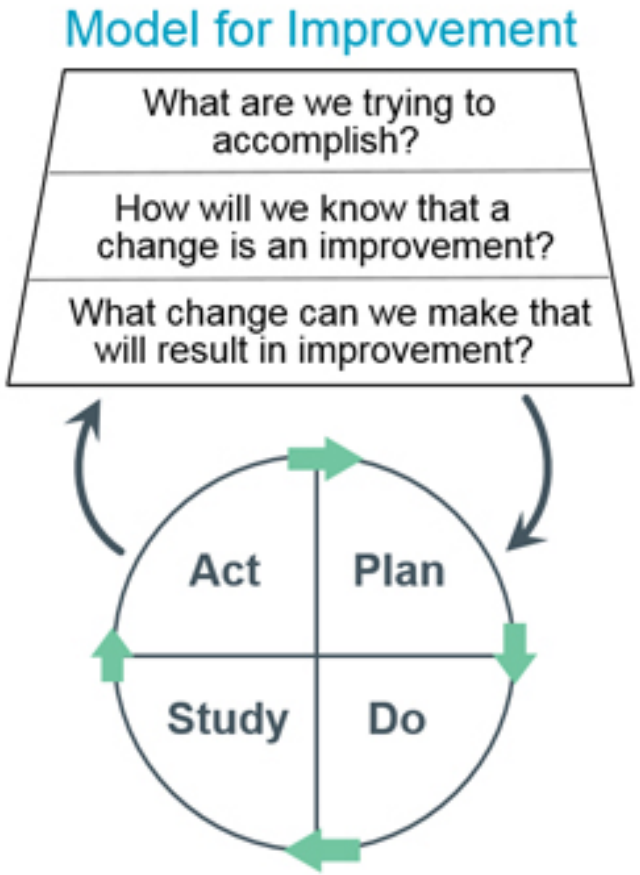
To **reimagine** pediatric primary care by:

- Meeting current and future health needs of children and their families
- Developing programs that resolve shortcomings in today's episode-based approach to pediatric care
- Improving the patient, family and workforce experience
- Leverage multiple opportunities, technologies and staff skill sets to provide alternatives to the single face to face encounter.
- Improve staff engagement by aligning the "work" with the skill set, ideally bringing back the "joy" of medicine and professional satisfaction.

Pillars to support ultimate vision

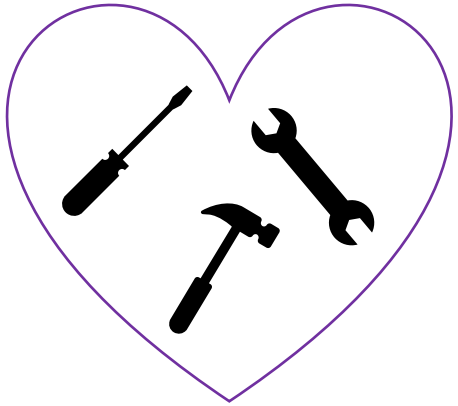


Quality Improvement



Dr Mike Evans: An Illustrated Look at Quality Improvement in Health Care

- https://youtu.be/nPysNaF1oMw
- Watch time: 8 mins



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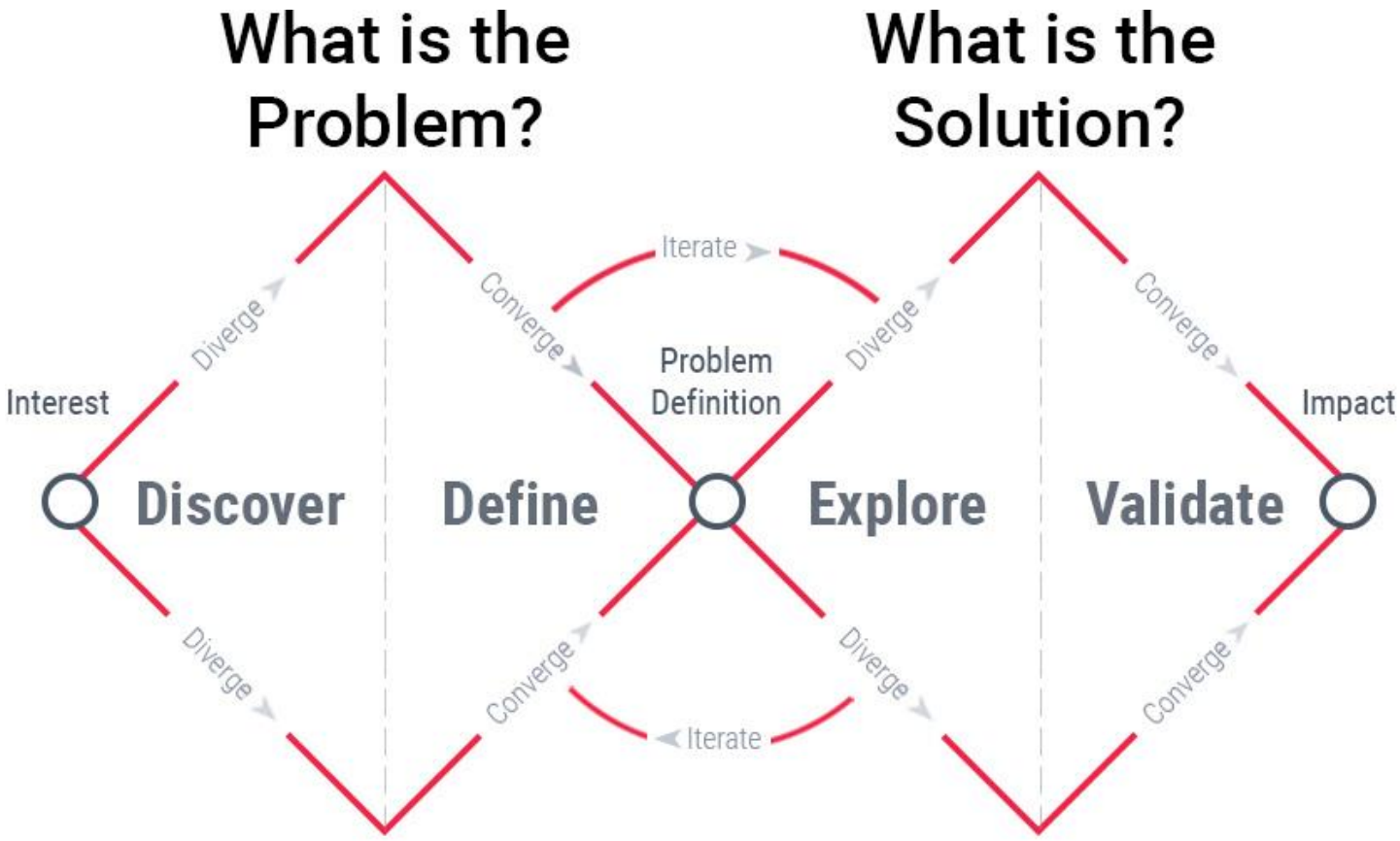
Innovation: Double Diamond Model



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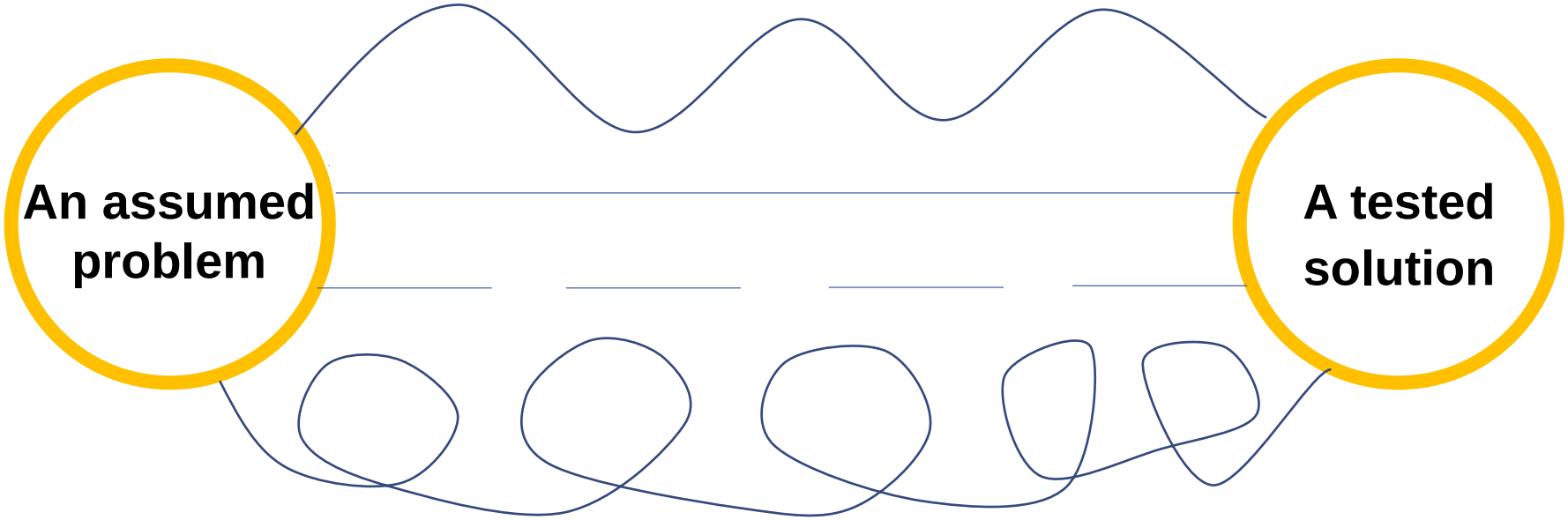
Innovation: Problem Solving Paths



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A Framework for Approaching Innovation

Differences between Operations and Innovation

	Operations	Innovation
Purpose	• Efficiency, current profit, predictability	• Growth, future value unknown
Structure	• Designed to deliver a specific product on time and on spec • Formal, mechanistic	• Designed to foster creativity and learning • Adaptive, loose
Culture	• Task mastery • Risk averse • Consensus driven • Customer driven	• Risk taking • Speed and agility • Experimentation driven • Seeking leading edges, not medians
Competencies	• Operational efficiency • Management	• Entrepreneurship • Design
Drivers	• Perform at a high level, reliably, each and every time	• Consistently develop new ideas • Meet milestones for growth

Martin LA, Mate K. IHI Innovation System. IHI White Paper. Boston, Massachusetts: Institute for Healthcare Improvement; 2018. (Available at ihi.org)

Old vs. New Mental Models of Innovation

Old vs. New Mental Models of Innovation

Old Mental Model	New Mental Model
Inventers invent.	Innovation is a disciplined process grounded in an understanding of need, based on close observation.
Innovation is everyone's job.	Innovation requires dedicated resources.
Leadership commissions innovation and then awaits its products.	Leadership conscientiously links innovation and operations together to ensure implementation and adoption of proven new ideas.
There is a specific way to innovate and create value.	Organizations use multiple innovation methods, matched to customer needs.
Innovations are found and developed within an organization.	The organization is open to new ideas from anywhere.

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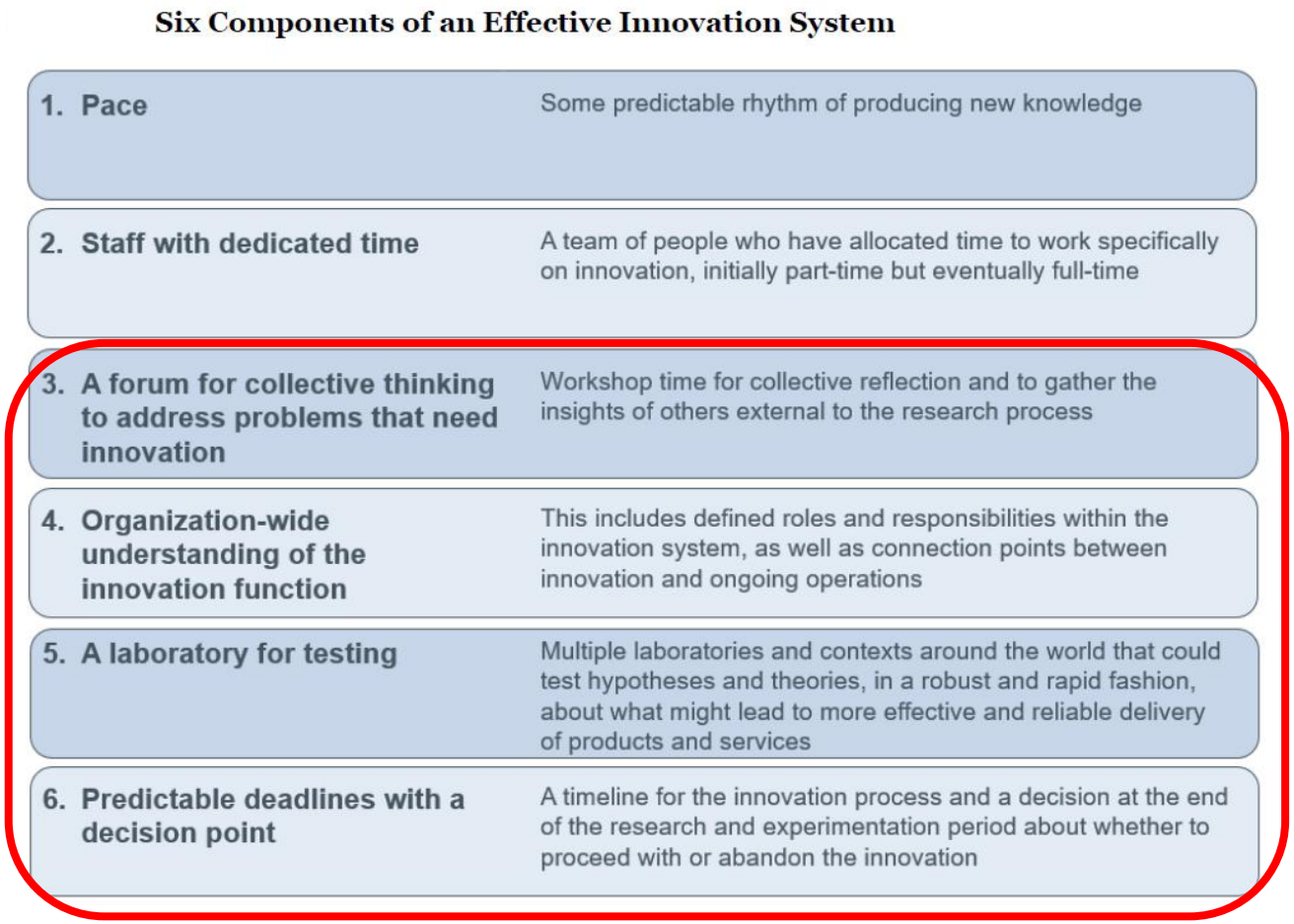
Six Components of an Effective Innovation System



Six Components of an Effective Innovation System

1. **Pace**	Some predictable rhythm of producing new knowledge
2. **Staff with dedicated time**	A team of people who have allocated time to work specifically on innovation, initially part-time but eventually full-time
3. **A forum for collective thinking to address problems that need innovation**	Workshop time for collective reflection and to gather the insights of others external to the research process
4. **Organization-wide understanding of the innovation function**	This includes defined roles and responsibilities within the innovation system, as well as connection points between innovation and ongoing operations
5. **A laboratory for testing**	Multiple laboratories and contexts around the world that could test hypotheses and theories, in a robust and rapid fashion, about what might lead to more effective and reliable delivery of products and services
6. **Predictable deadlines with a decision point**	A timeline for the innovation process and a decision at the end of the research and experimentation period about whether to proceed with or abandon the innovation

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IHI Innovation Project Selection Criteria

Major Criteria (Always Required)	Minor Criteria (One or More Required)
• Strategic • Specific • High priority • Value added • Unique contribution • Feasible	• Market intelligence indicates interest in this project • Committed testers have been identified • Project is funded by a partner • Idea is “on the edge”

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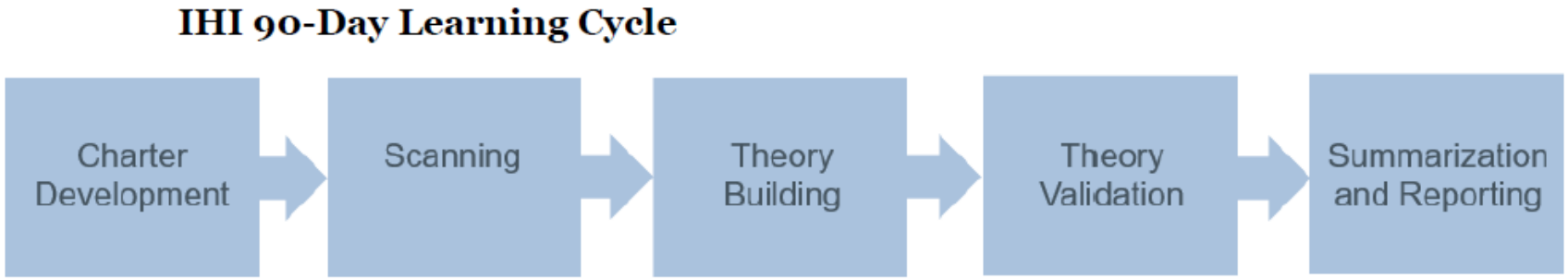
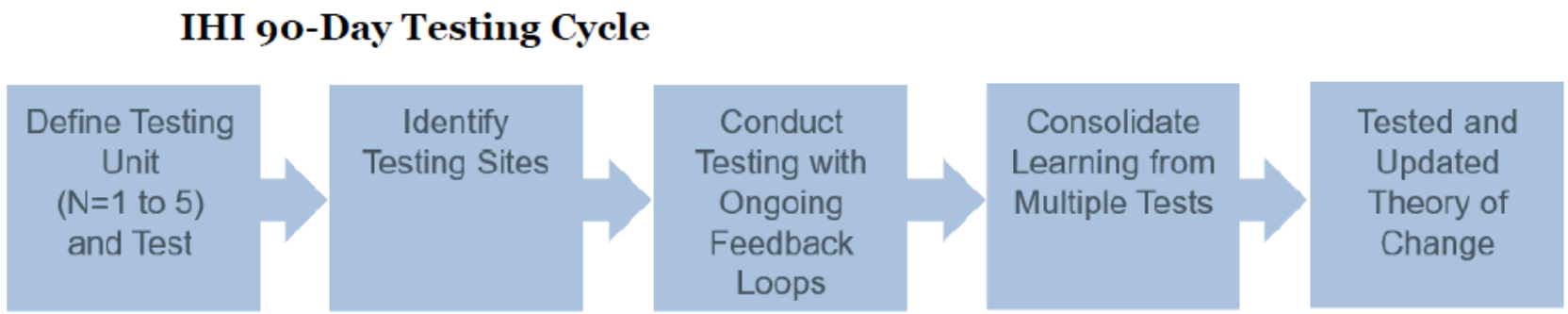
IHI 90-Day Learning and Testing Cycles





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Decision Point

Each innovation project has a decision point at the end of 90 days, where the innovation team and senior practice/health system leaders chose one of the following actions:

- **Fail:** Stop additional development
- **Direct to to Market:** Launch a new program or service based on the innovation
- **Hold:** The innovation has strong merit, but there are currently no willing testers; no market available for the innovation
- **Develop Further:** Run another 90-day Learning Cycle to further develop and test a promising idea that was determined to be not yet mature enough for deployment

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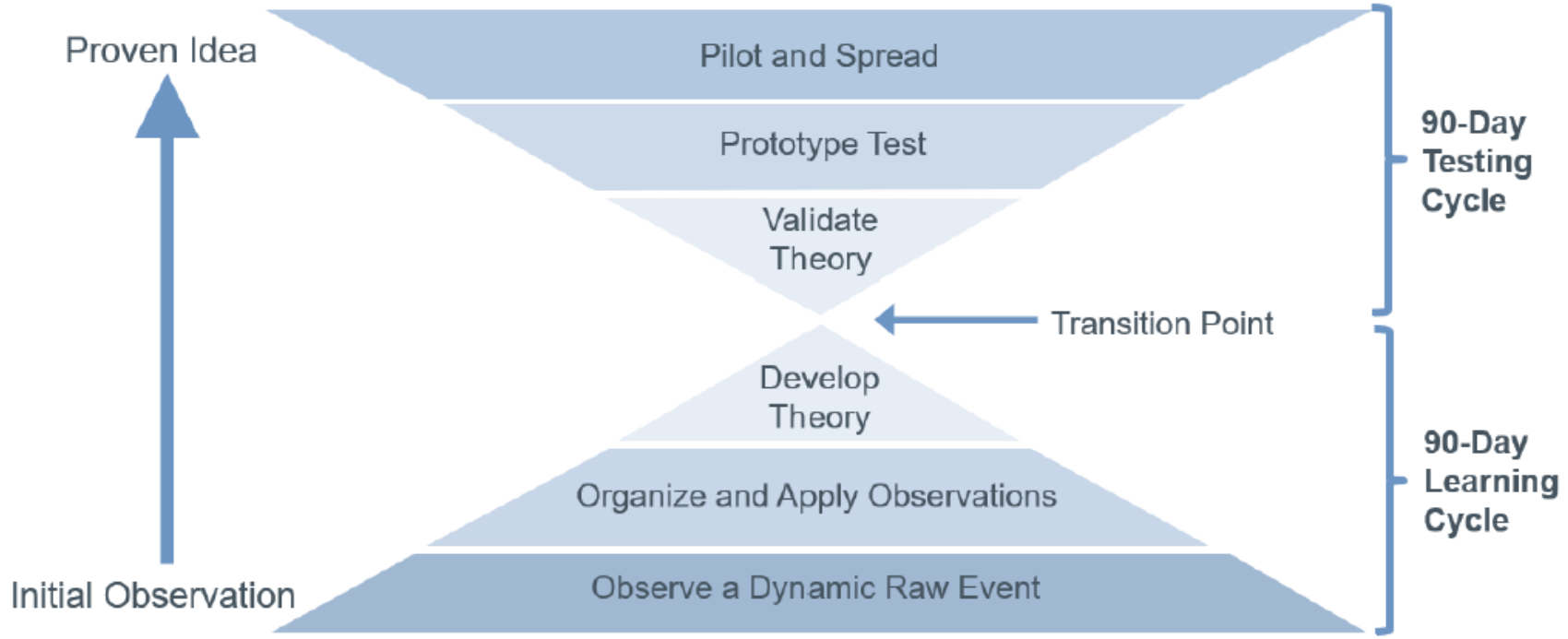
IHI Innovation Process: Linking 90-Day Learning and Testing Cycles to Move from Initial Observation to a Proven Idea



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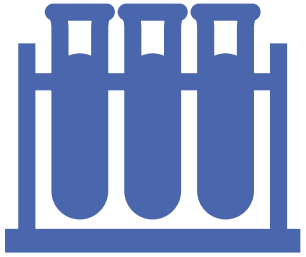
Defining the Problem

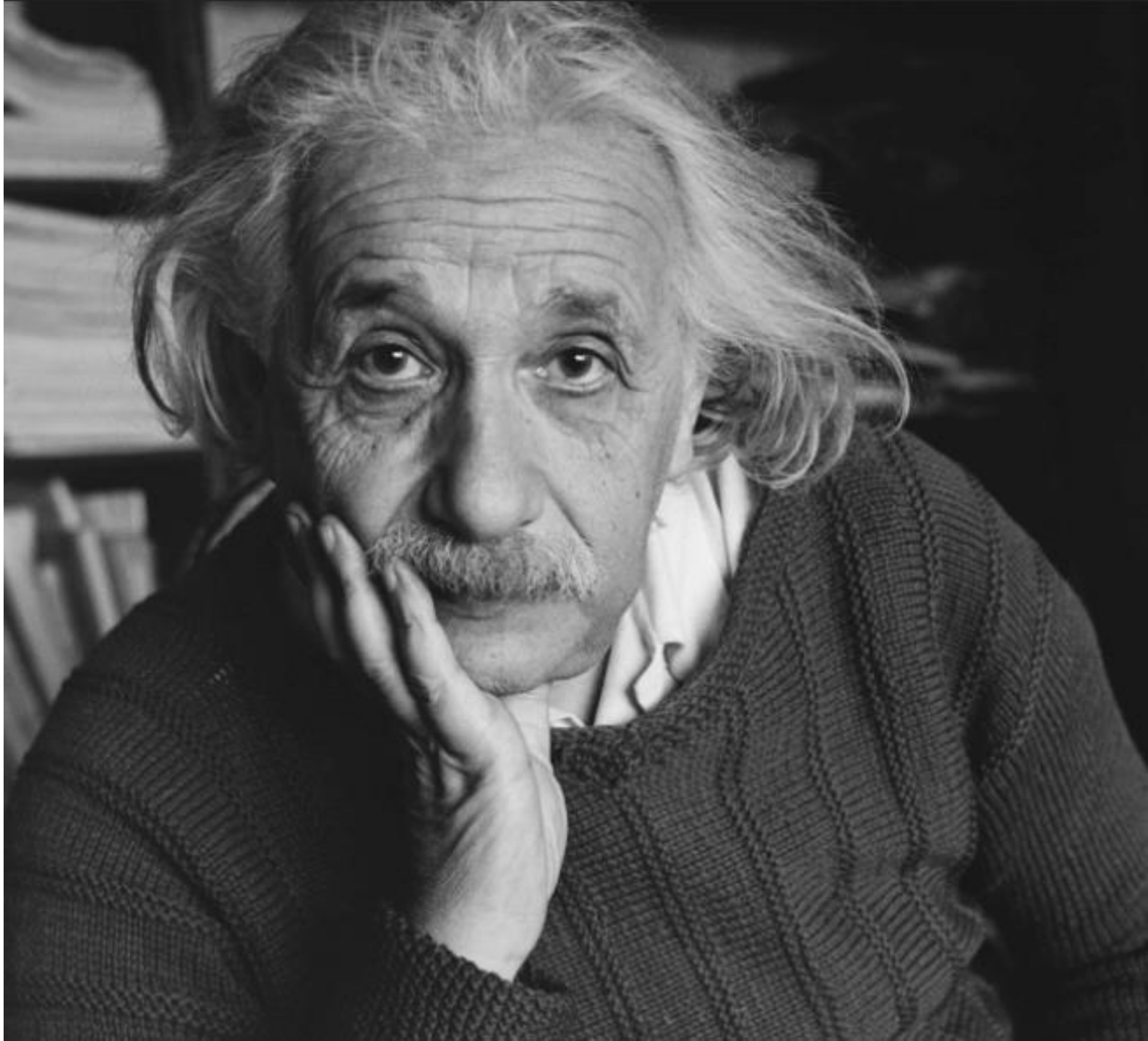
Brainstorm & Ideate



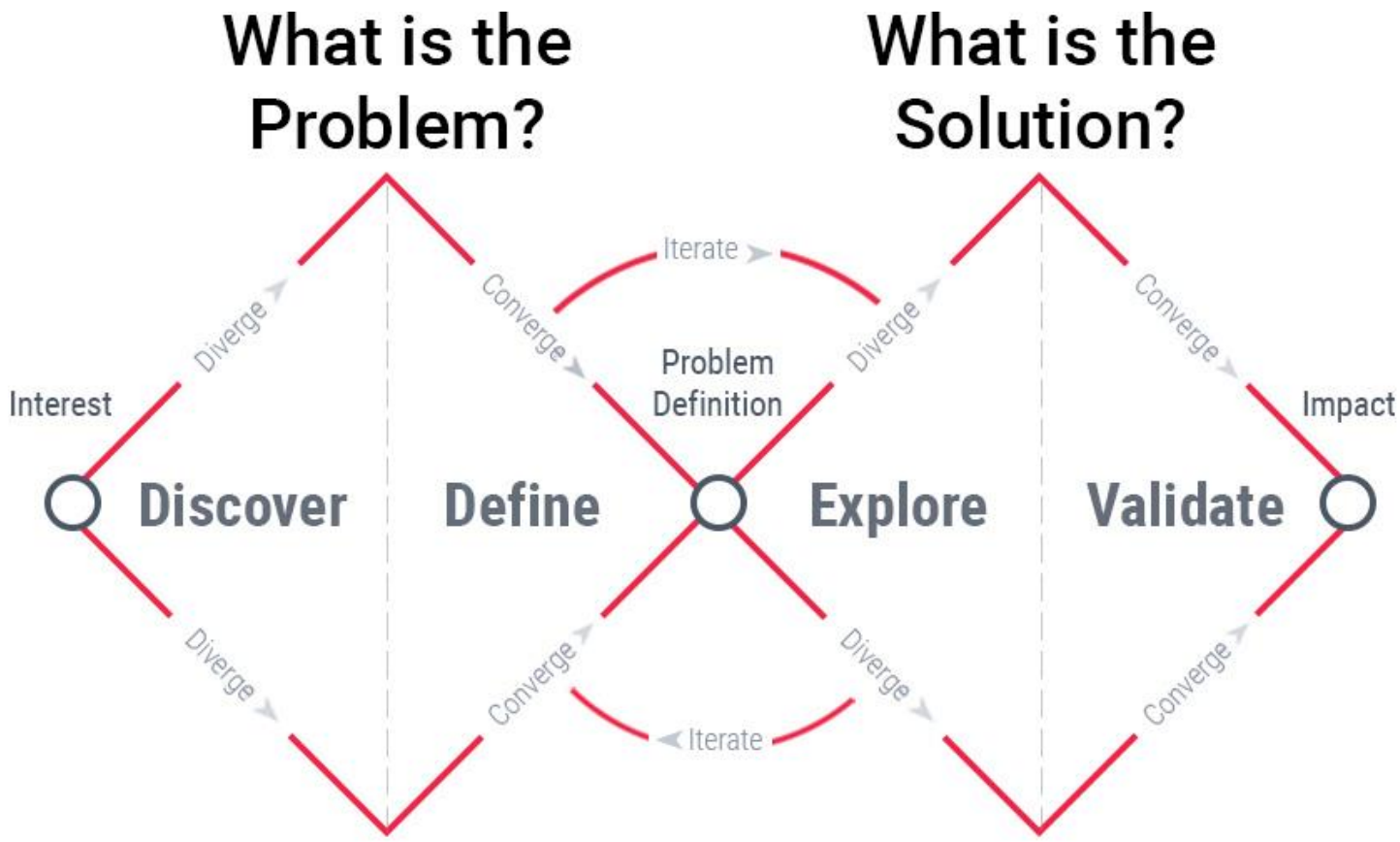
Test and Validate

“If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it”

-Albert Einstein



Innovation: Double Diamond Model



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Defining the Problem

- If we start with the wrong problem, or were given the wrong problem to solve, it can take us down unproductive paths
- Defining problems is simple but it requires patience, repetition and thorough analysis
- There are a variety of “tools” to help get to the root of the problem: 5- Why’s, 5 so-what’s? , 5 Why else?; User Stories, etc.
- Direct observation and interviews

Spradlin, D. (2012) Are you solving the right problem? *Harvard Business Review. https://hbr.org/2012/09/are-you-solving-the-right-problem*

User Story

"**As a** <role or persona>, **I can** <goal/need> **so that** <why>"

- Focused on what matters most to the user
- Solid basis for communication and collaboration
  - Achieve clarity across the team – standardize communication
  - User stories are not tasks
  - Simple and solid

As a Starbucks drive through consumer, I want to be able to drink my coffee in the car without spilling.

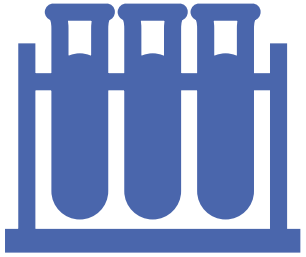
As a Starbucks Barista, I don't want to waste time removing the paper from every straw, especially during iced coffee season.

As a Starbucks customer who sits inside the restaurant, I am concerned about the environmental impact of plastic straws, and I don't want to use them.

As a Starbucks mobile customer, I want a beverage I can pick up quickly and carry out to drink on the go.

Defining the Problem

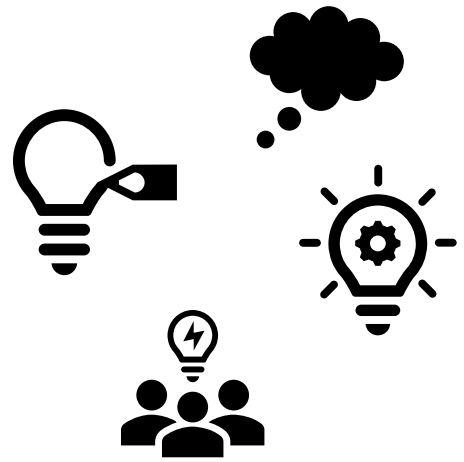
Brainstorm & Ideate



Test and Validate

Brainstorm & Ideate

- Design Thinking: How to get unstuck and generate new ideas
- Generally, we want to:
  - Generate as many ideas as possible
  - Suspend judgement
  - Start to identify & question assumptions
    - So we can test them– “what can I learn in 2 weeks?”



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Brainstorm & Ideate

- Context (5/5/21): 1 in 3 in US fully vaccinated against COVID-19. Herd immunity would be achieved at 70-90% of total population immune through infection and/or vaccination.
- **What is the problem?**
  - **Reaching herd immunity?** ⚠


U.S. INTERNATIONAL CANADA ESPAÑOL 中文

Monday, May 3, 2021
Today's Paper

The New York Times

Reaching 'Herd Immunity' Is Unlikely in the U.S., Experts Now Believe

Cincinnati Children's

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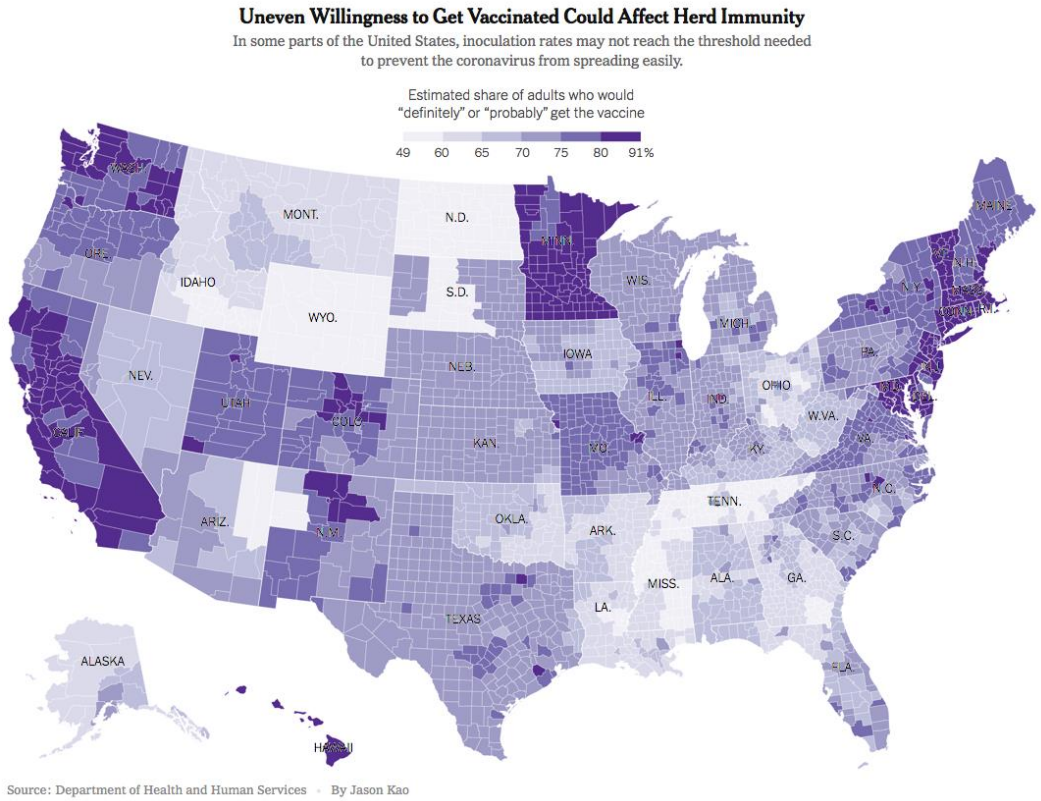
Brainstorm & Ideate

- Virus is mutating
- Disease transmission is local
- Movement of people is international
- Vaccine hesitancy is high
  - ~30 percent of U.S. still reluctant
- The virus will most likely become a manageable threat
  - Continued immunizations, will be crucial to limiting the severity of outbreaks, if not their frequency



https://www.nytimes.com/2021/05/03/health/covid-herd-immunity-vaccine.html?smid=url-share

Cincinnati Children's

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Brainstorm & Ideate

"You vaccinate enough people, the infections are going to go down."
{solution: vaccinate} {problem: infections}

3 techniques we will use today:

1) "How Might We…" statements
2) Worst Idea technique
3) Yes, and…

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Brainstorm & Ideate: HMW

"How Might We…" statements

- Open-ended questions promote possibility
- Checklist:

  - ✓ Build on existing problem understanding and/or insight
  - ✓ Avoid solution in the question
  - ✓ Broad enough to ensure many creative ideas
  - ✓ Focus on desired outcome
  - ✓ Phrase positively

How Might We…

Increase COVID immunization rates?

How Might We…

Recall background info:

- Virus is mutating
- Disease transmission is local
- Movement of people is international
- Vaccine hesitancy is high
- Continued immunizations will be crucial to limiting outbreaks

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https://www.nngroup.com/articles/how-might-we-questions/

Brainstorm & Ideate: Worst Idea

Brainstorm methods (general) independent + group

- 2-5 mins: write down as many ideas independently (minimum of 3)
- 5-10 mins: round robin share (group)

Worst Idea technique

- ❑ Goal: produce the silliest, craziest ideas; illegal, ridiculous, awful, etc.
- ❑ Encourages *everyone's* participation
- ❑ Group laughter is relaxing & fun
- ❑ Good ideas can come from bad ones

How might we…

- Increase COVID immunization rates?

What is the WORST POSSIBLE idea/way that we might increase COVID immunizations?

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Brainstorm & Ideate: Yes AND,

Brainstorm methods group

- 5-10 mins: round robin share (group)
- Ways to feedback:
  - **Yes, and…**
    - Improv comedy– accept what the other participant has stated and expand on that line of thinking

How might we…

- Increase COVID immunization rates?

What is the WORST POSSIBLE idea/way that we might increase COVID immunizations?

Yes, and…

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Brainstorm & Ideate: Yes AND,

Brainstorm methods group

- Ways to feedback:
  - **Yes, and this assumes…**
    - First step in narrowing ideas for testing:
      identify assumptions
    - Second step:
      assumption mapping
      - Risk vs certainty (sometimes risk vs difficult-hard to validate)
      - Somewhat analogous to effort vs impact matrix

What's an assumptions map?

- https://youtu.be/V5bMYLKSXT4
- Watch time: <4 mins

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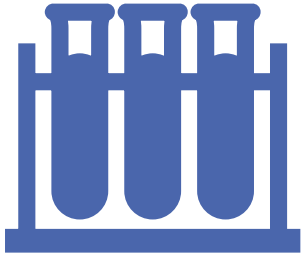

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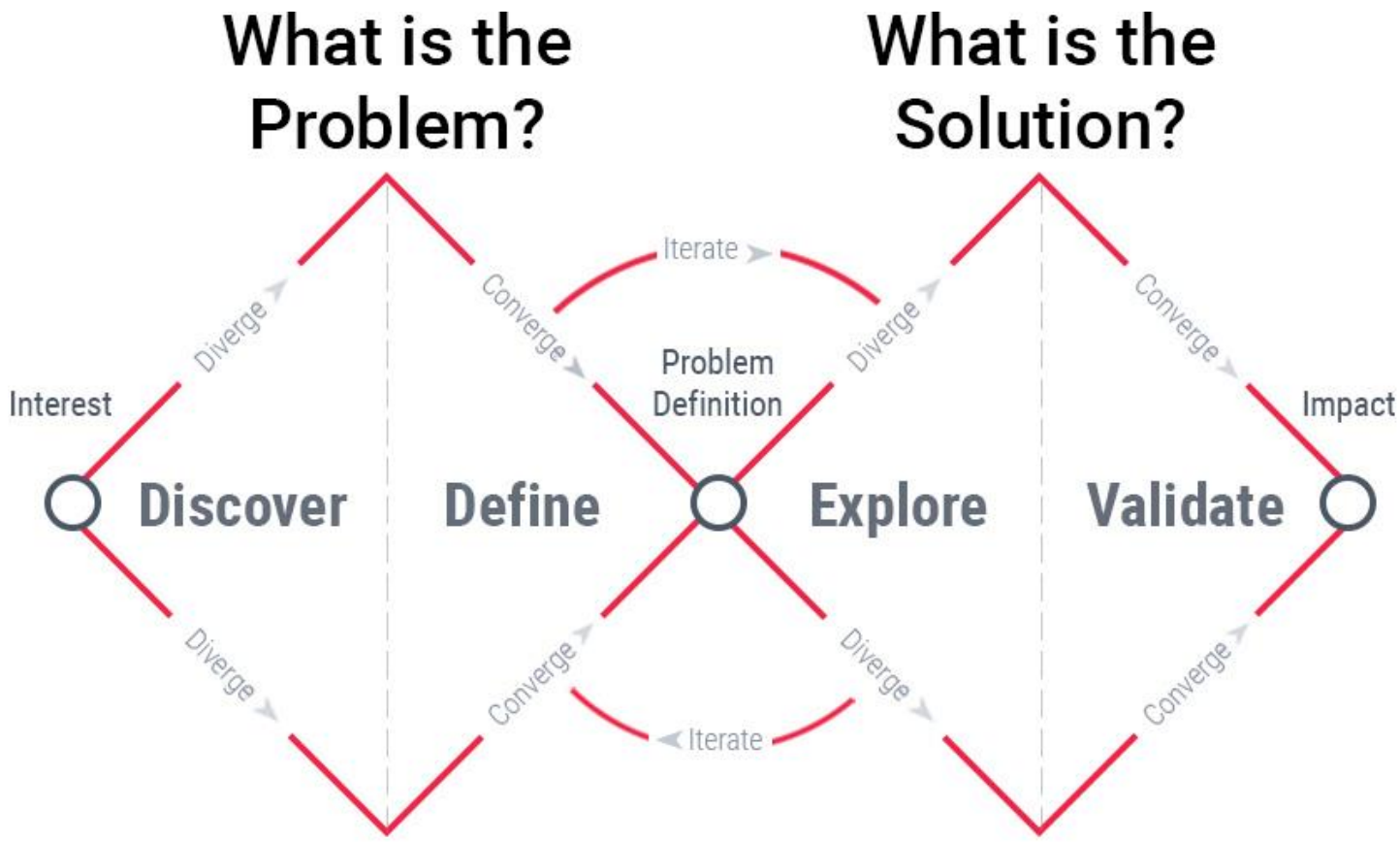

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Interviews

- Use open questions in interviews: “Can you show me?” ”Say more about that.”
- Use non-leading questions: “How was it?” not: “Was it fun?”
- Get a specific instance: “What did you eat yesterday?” not: “What do you usually eat?”

Personas & Extreme Users

- A persona is a detailed description of an imaginary typical user who will be the targeted user of the new experience
- Extreme users are over- or under-users; if you can meet their needs, you can meet the needs of the general persona

Blue Sky Brainstorming

- “Sky’s the limit” approach
- Keep all options possible; include “crazy” and “impossible” ideas

One Night Stand

- A prototype or system that performs a solution for a short amount of time to gain understanding

Solution Qualities

- Users will often describe what they wish they had.
- To get to the root of their need, ask: “What would be good about that?”
- Their answers will help you discover solution criteria, or the qualities of the needed solution

Fake Front End

- A non-functional version of a product
- Allows you to determine “would people want it?” and “if they want it, how many times would they use it?”

Fake Back End

- Seems like a real new service to the user, but it is not fully developed yet
- Allows you to understand the users of the service before completing development

Vapor Test

- Offer something that is not available yet
- Helps test metrics and demand, and gain user feedback

Prototypes

- Create quick and inexpensive prototypes to show users examples of new solutions
- Examine how users value different qualities and solutions.
- Repeat process of prototyping with the knowledge you gain from each iteration.

Mockingbird

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Why do we need to test & validate?

JAMA Cardiology | Original Investigation

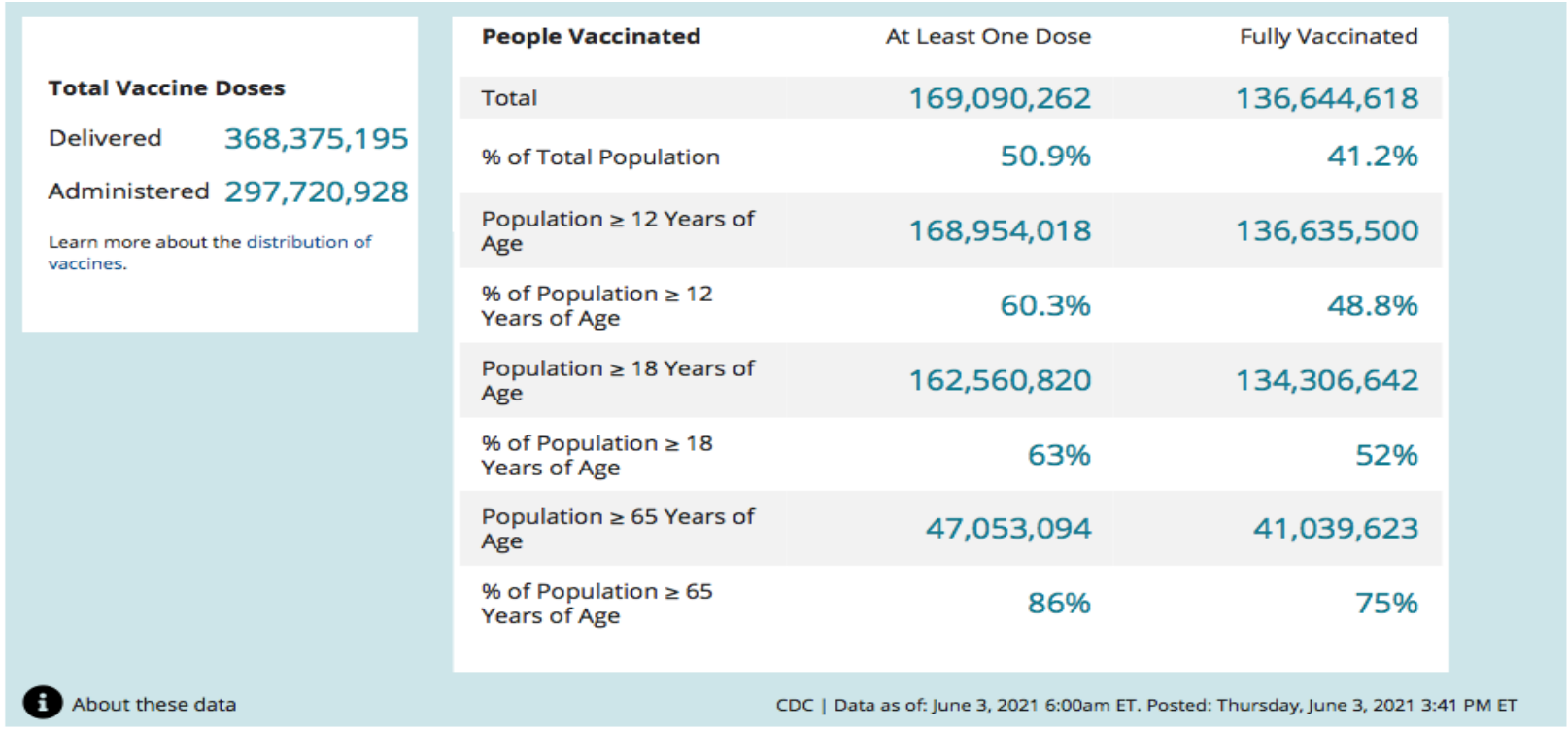
Effect of Passive Choice and Active Choice Interventions in the Electronic Health Record to Cardiologists on Statin Prescribing
A Cluster Randomized Clinical Trial

Srinath Adusumalli, MD, MSc; Julie E. Westover, BS; Douglas S. Jacoby, MD; Dylan S. Small, PhD; Christine VanZandbergen, MPH, MS, PA-C; Jessica Chen, MBA; Ann M. Cavella, BA; Rebecca Pepe, MPH; Charles A. L. Rareshide, MS; Christopher K. Snider, MPH; Kevin G. Volpp, MD, PhD; David A. Asch, MD, MBA; Mitesh S. Patel, MD, MBA

"My perception is that I am already prescribing statins appropriately for my patients. When I see this alert, the first question that enters my mind is how this message was generated, ie, what were the determinants that went into this recommendation? It would be more helpful if the reasons for the recommendation were more transparent–hard to just 'buy into' something that contradicts my preceding judgment."

Problem

Roughly 2 in 5 people 12 or older in the US are fully vaccinated against COVID-19. In order to reach herd immunity we need 70-90% of the total population to be vaccinated. How do we tackle this next stage of vaccination and overcome logistical and cultural barriers to vaccination in the US?



Total Vaccine Doses

Delivered	368,375,195
Administered	297,720,928

Learn more about the distribution of vaccines.

People Vaccinated	At Least One Dose	Fully Vaccinated
Total	169,090,262	136,644,618
% of Total Population	50.9%	41.2%
Population ≥ 12 Years of Age	168,954,018	136,635,500
% of Population ≥ 12 Years of Age	60.3%	48.8%
Population ≥ 18 Years of Age	162,560,820	134,306,642
% of Population ≥ 18 Years of Age	63%	52%
Population ≥ 65 Years of Age	47,053,094	41,039,623
% of Population ≥ 65 Years of Age	86%	75%

Potential Solutions

- Financial incentives for vaccination
- Require vaccination to attend public events and travel
- Celebrity endorsements for vaccination via TikTok
- Common vaccine training for medical professionals
- Stealth vaccination

Israel poised to lift limits on attendance for vaccinated at events

In further easing of restrictions, ministers set to allow even those who have not been inoculated to visit gyms, swimming pools

By TOI STAFF
25 April 2021, 9:23 pm | 1

116 shares

Soccer fans at a game between Beitar Jerusalem F.C. and Ashdod F.C., at Teddy Stadium, Jerusalem, on March 17, 2021. (Flash90)

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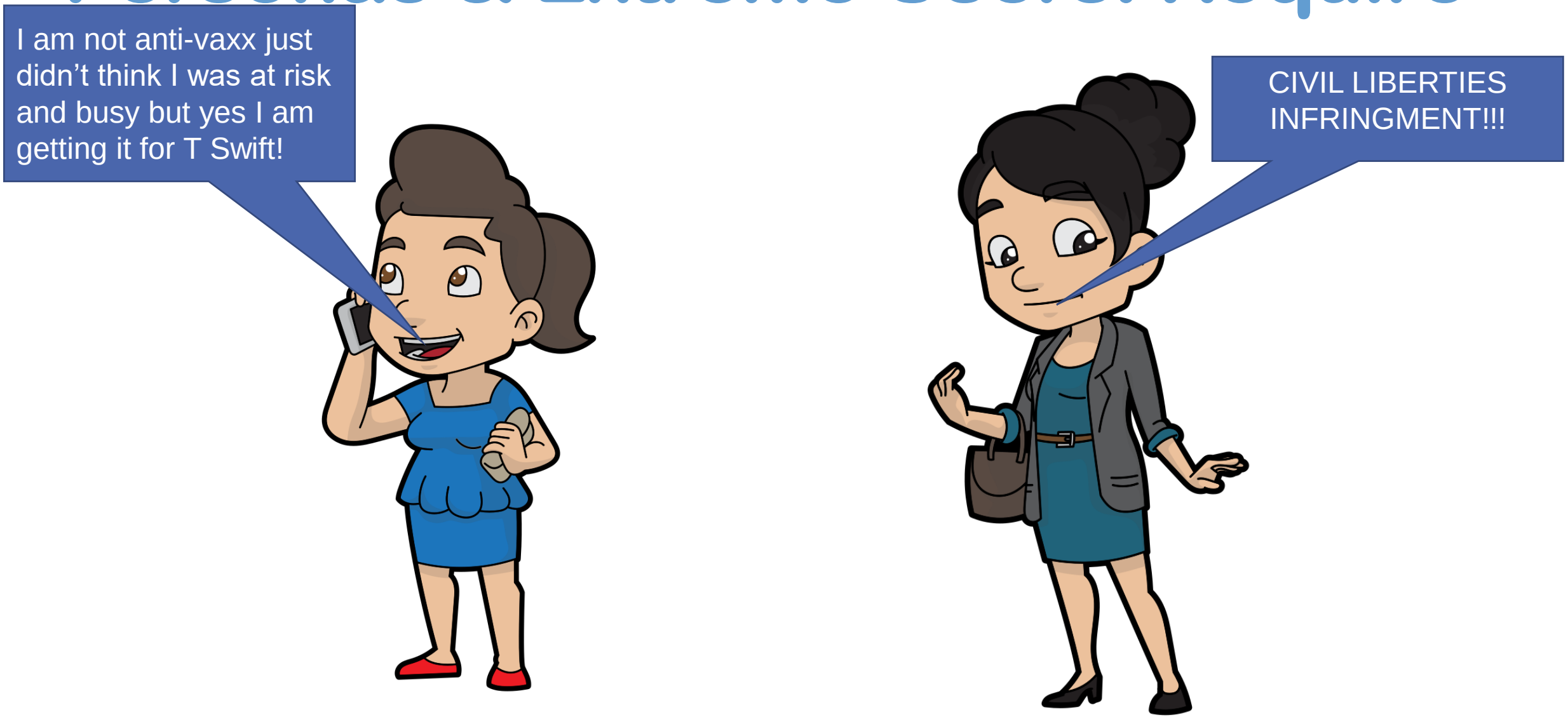
Personas & Extreme Users: $ Incentives

I have to find childcare to go to a vaccinate, the financial incentive helps to cover the cost

I don’t need the money and I don’t want the shot.

Personas & Extreme Users: Require



Fully Recyclable Sneakers

Artificial Womb

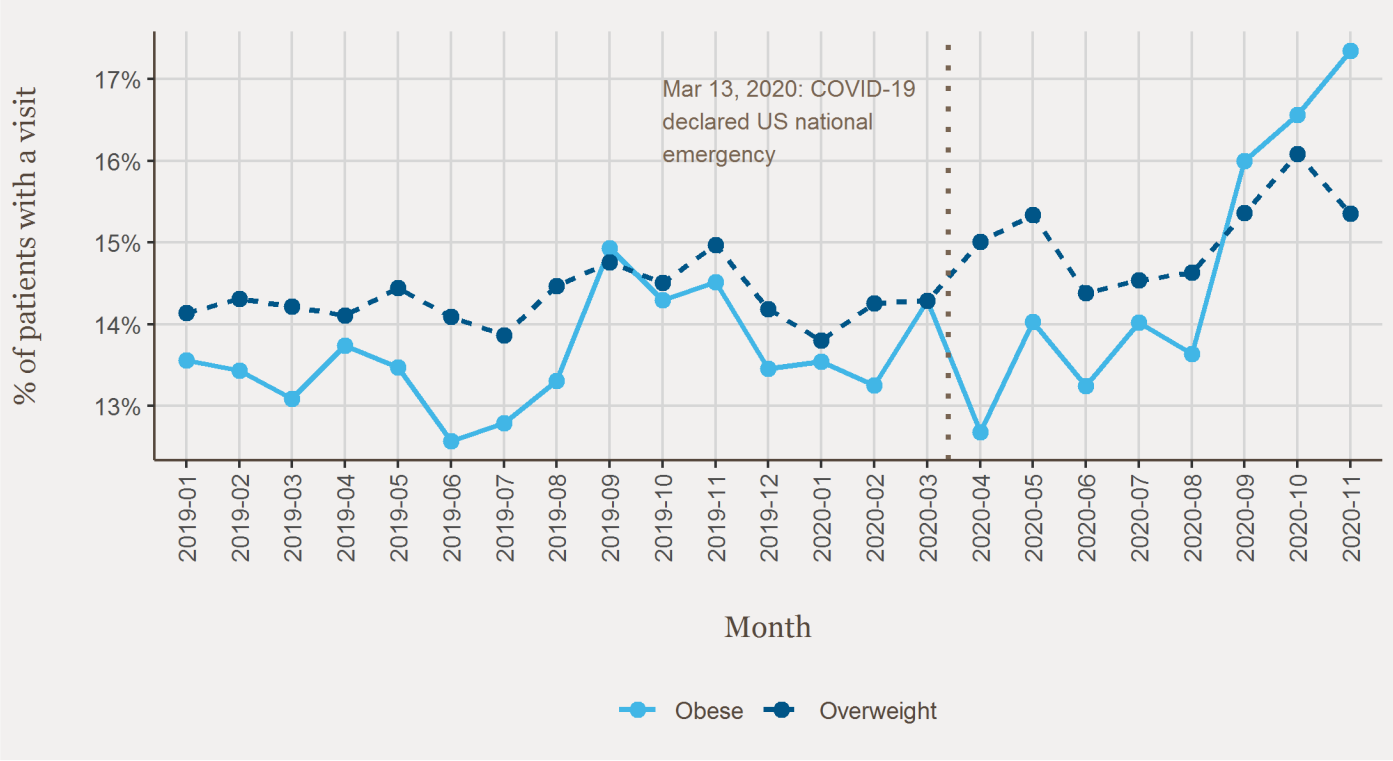
- Before: Premature infant as newborn
- Reconceptualization: Premature infant as fetus needing more time in the womb

Analytics: Crucial at Every Stage of the Process

- Data analytics and evaluation is the cornerstone for successful innovation
  - Data should be used to fully define the problem you are trying to solve AND help you evaluate the outcome of your testing
- Interventions/innovations need to be rigorously evaluated so that we can be certain the innovation works and clearly understand what doesn't
- Determine how the project will be evaluated before beginning a pilot test

Body Mass Index: The proportion of overweight/obese patients with a primary care visit has been increasing since the start of the COVID pandemic

Overweight/obesity among patients with a primary care visit



- Between Feb and Nov 2020, **overweight** (85th to < 95th percentile) prevalence increased from **14.3%** to **15.4%** and **obesity** (≥ 95th percentile) prevalence increased from **13.3%** to **17.3%**

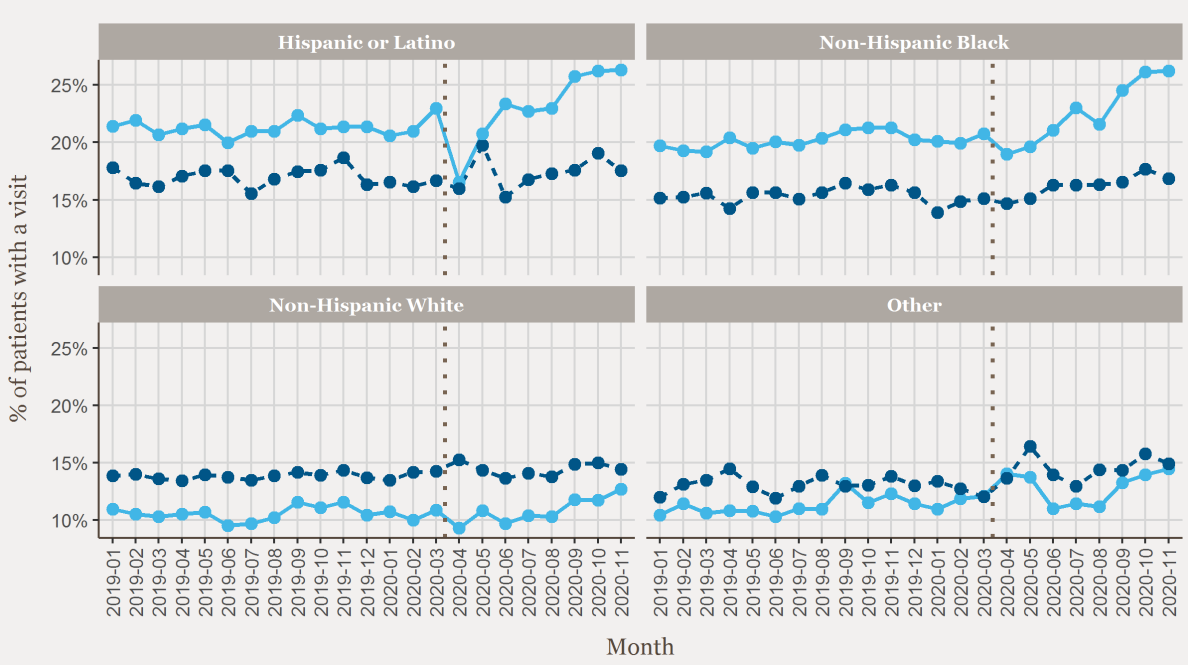
Jenssen BP, Kelluy MK, Powell M, Bouchelle Z, Mayne SL, Fiks AG: "COVID-19 and Changes in Child Obesity" Pediatrics March 2021 [Epub ahead of Print] Notes: doi: 10.1542/peds.2021-050123.

Data Source: CHOP data warehouse

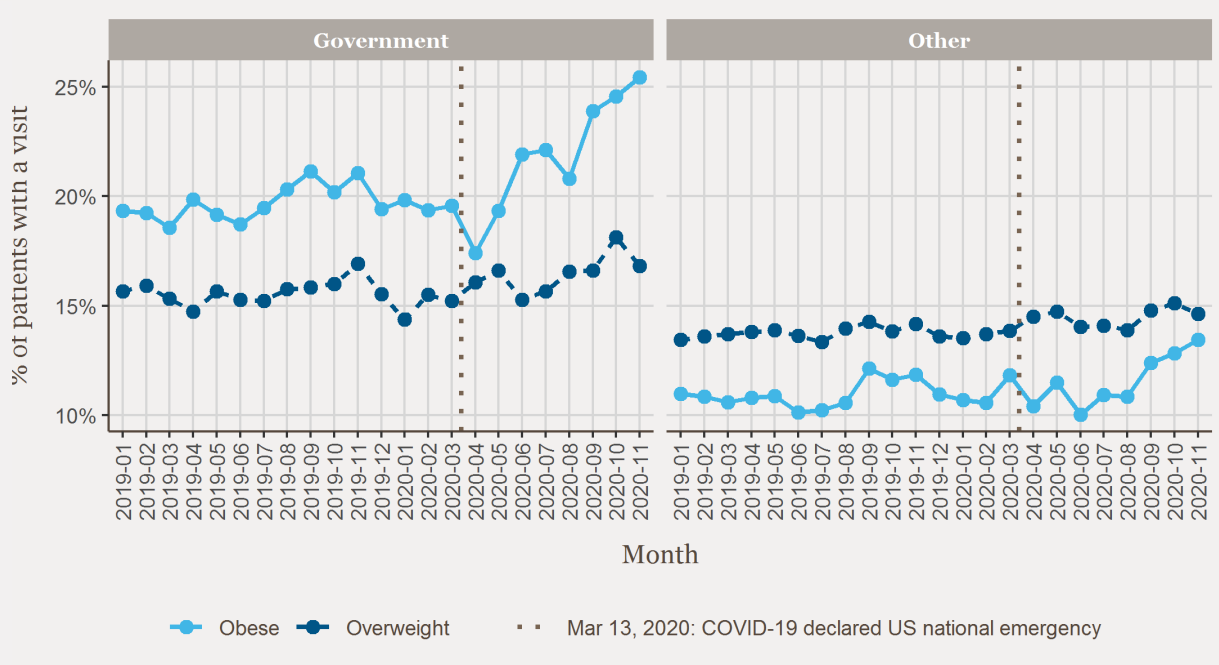
BMI disparities exist by race/ethnicity and payor type

MORE THAN 25% OF HISPANIC OR LATINO, NON-HISPANIC BLACK, AND PUBLICLY INSURED PATIENTS SEEN IN NOV 2020 MEASURED IN THE OBESE RANGE COMPARED TO 12.7% OF NON-HISPANIC WHITE AND 13.5% OF PATIENTS WITH OTHER INSURANCE TYPES

By Race/Ethnicity



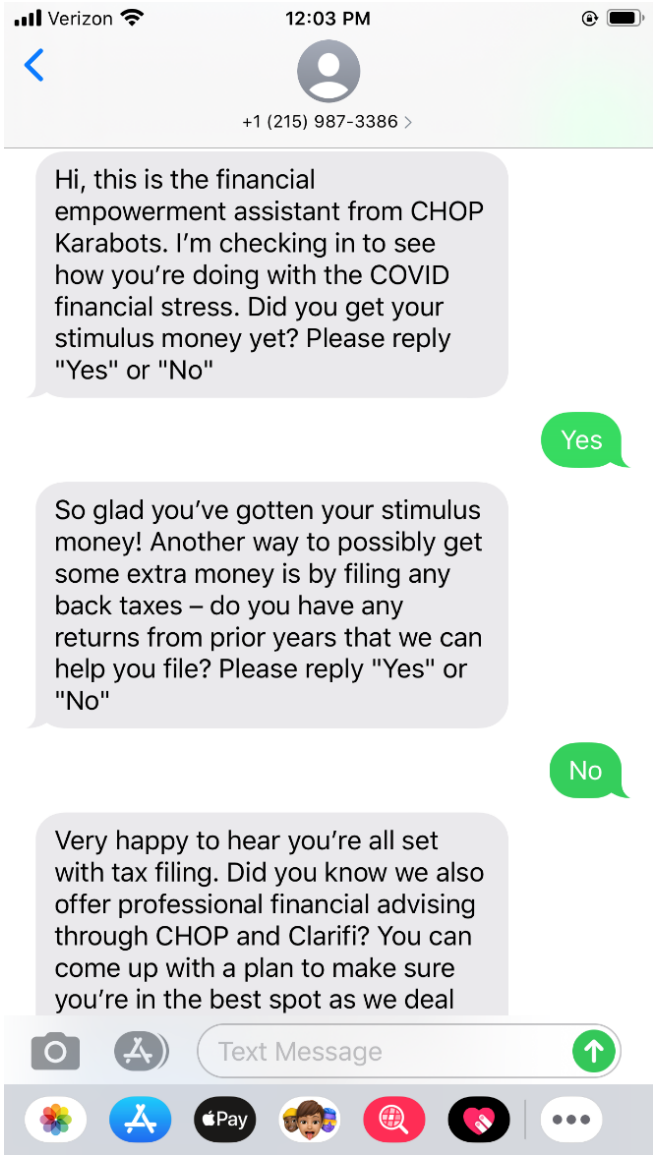
By Payor Type

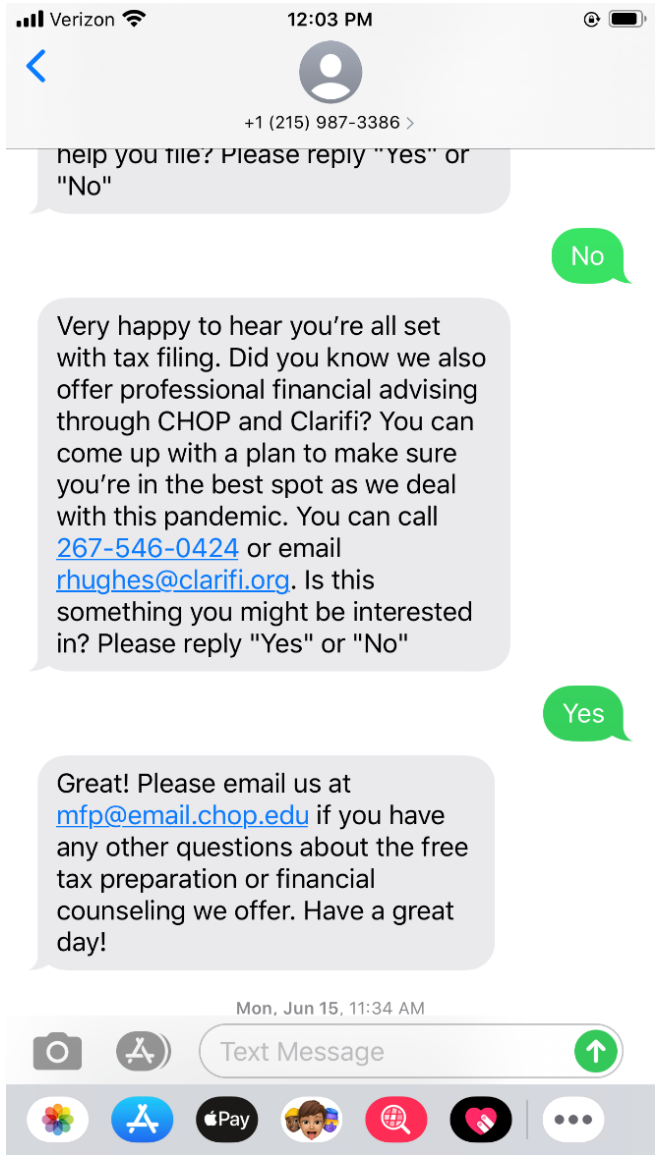


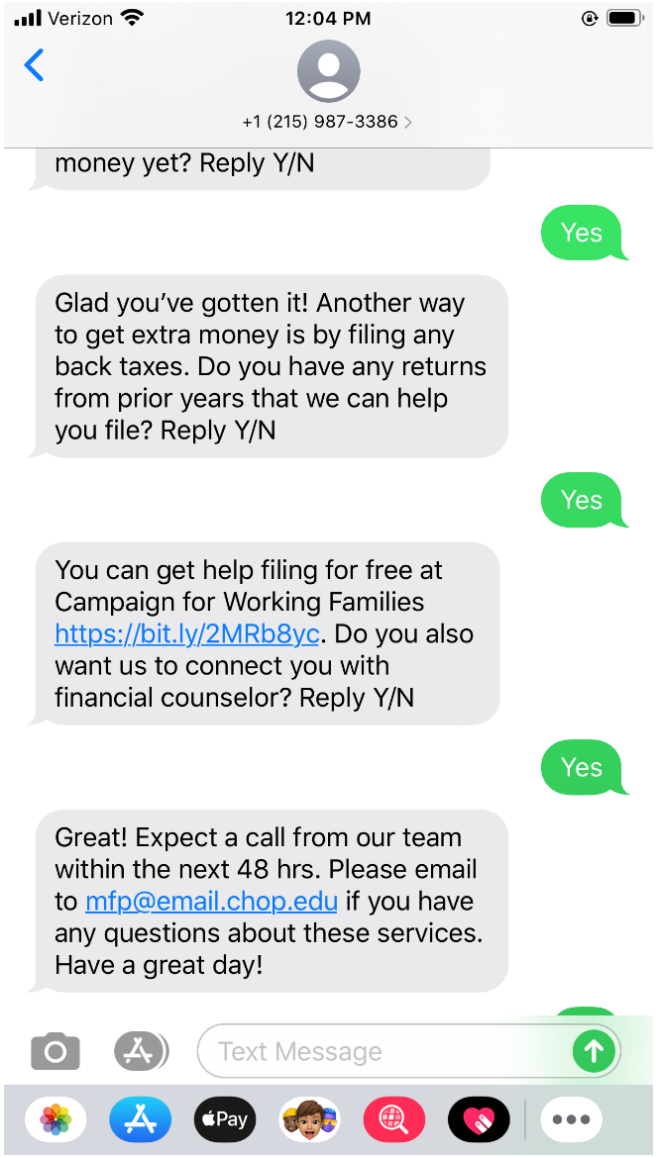
- The racial-ethnic disparity in obesity increased from a ~10 percentage point difference in Feb. to > 13 percentage points in Nov.
- The payor disparity increased from 9 to 12 percentage points over the same time period

Data Source: CHOP data warehouse

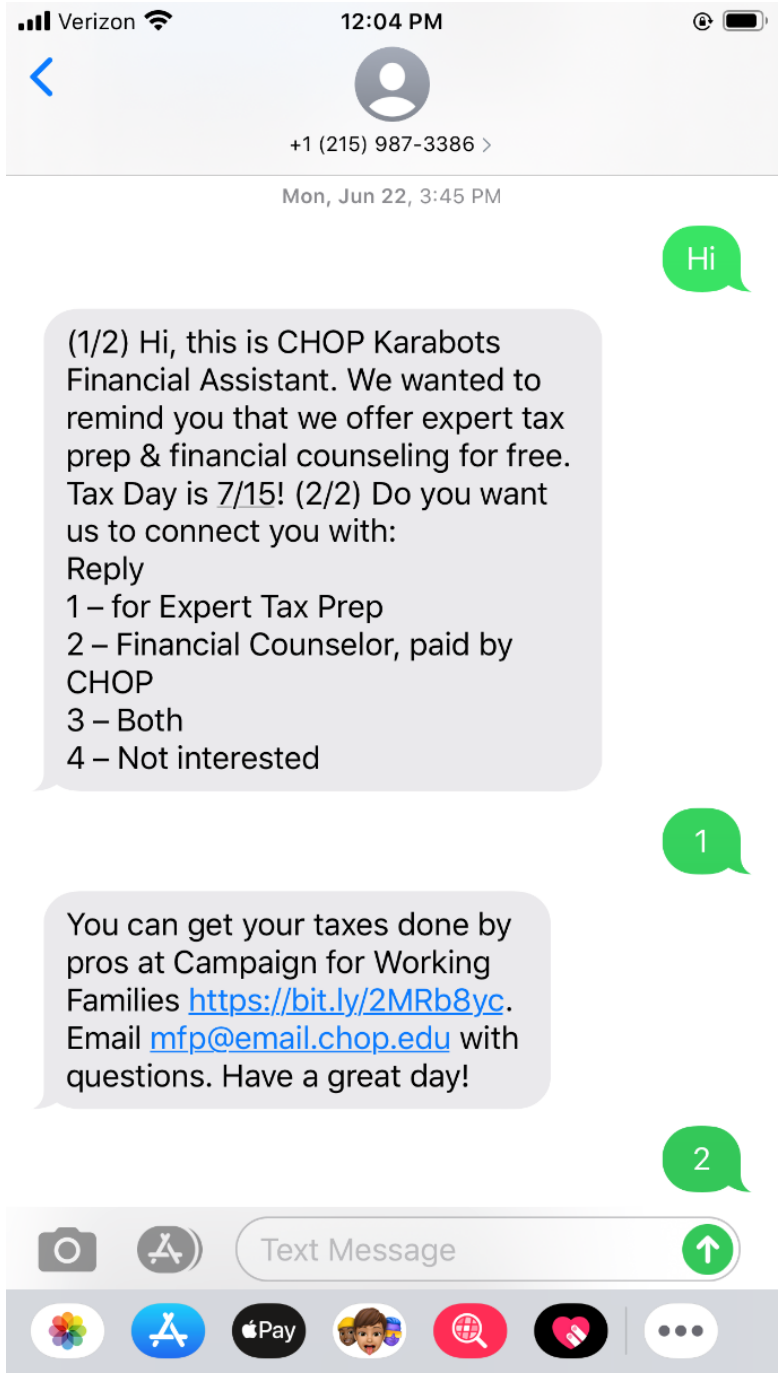
Pilot #1 (Conversational)



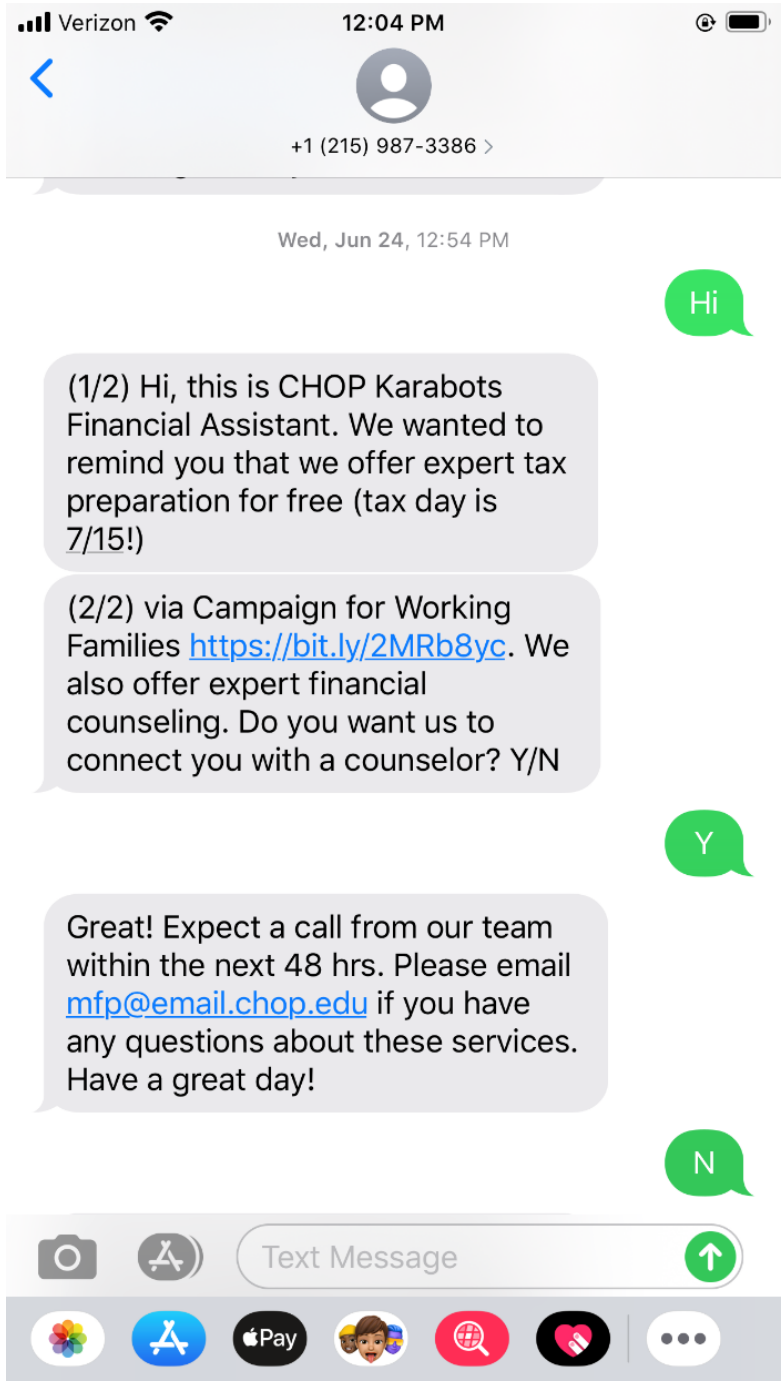




Pilot #2 (Multiple Options)



Pilot #3 (Simple text)



Dalembert G, Fiks AG, O'Neill G, Rosin R, Jenssen B: "Impacting Poverty with Medical Financial Partnerships Focused on Tax Incentives" New England Journal of Medicine Catalyst 2(4), April 2021.

Medical- Financial Partnership Texting Results

Large pilot- 1,000 texts
Cohort: Medicaid patients in Healthier Together target zip codes (Karabots and Cobbs Creek)

Outcome	Pilot 1.2 (N = 306)	Pilot 2.2 (N = 300)	Pilot 3.2 (N = 291)
Replied	**84 (27.5%)**	**43 (14.3%)**	**11 (3.8%)**
Interested in tax prep	8 (2.6%)	5 (1.7%)	NA
Interested in financial counseling	11 (3.6%)	3 (1%)	2 (0.7%)
No reply	222 (72.5%)	257 (85.7%)	280 (96.2%)
Undeliverable	44	30	29

Initial Pilot- 300 texts
Cohort: Randomly selected patients from Karabots and Cobbs Creek

Outcome	Pilot 1 (N = 93)	Pilot 2 (N= 94)	Pilot 3 (N = 96)
Replied	**32 (34%)**	**8 (9%)**	**9 (9%)**
Interested in tax prep	2 (2%)	0 (0%)	NA
Interested in financial counseling	1 (1%)	1 (1%)	1 (1%)
No reply	61 (66%)	86 (91%)	87 (91%)
Undeliverable	7	6	4

If we had not evaluated each pilot text separately, we might have incorrectly assumed that all text message designs were equally as effective.

Questions?

Thanks to Maura Powell, MBA; Flaura Winston, MD; Daria Ferro, MD; Elena Huang, MD; and the Possibilities Project Team