



American
Heart
Association.

Health Care  Food™

A Primer on Food is Medicine

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<https://healthcarexfood.org>

Where does US rank in life expectancy compared to other countries?

A: Best in the world

B: 5th

C: 10th

D: 21st

E: 48th

Where do you think the United States ranks in life expectancy?

A: Best in the world

B: 5th

C: 10th

D: 21st

E: 48th

Where does health care spending rank compared to other countries?

A: 1st

B: 5th

C: 10th

D: 21st

E: 48th

Where do you think the United States ranks in life expectancy?

A: 1st

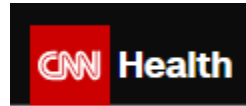
B: 5th

C: 10th

D: 21st

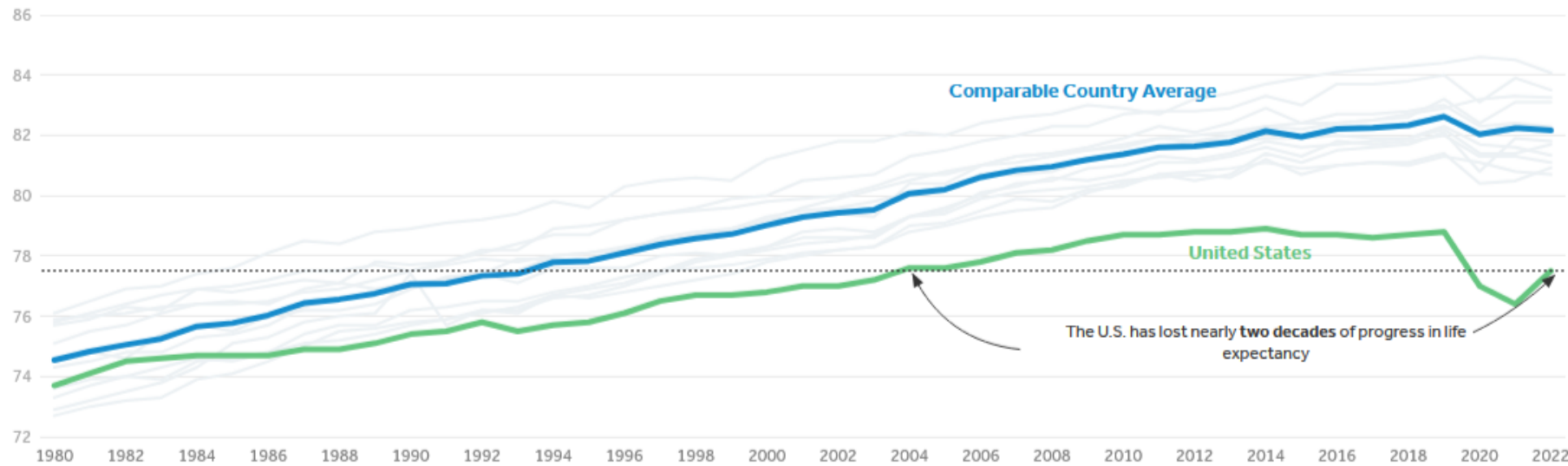
E: 48th

We need to find more cost-effective ways to improve health. . .



US ranks last on key health care measures compared with other high-income nations, despite spending the most, report says

Life expectancy at birth, in years, 1980-2022



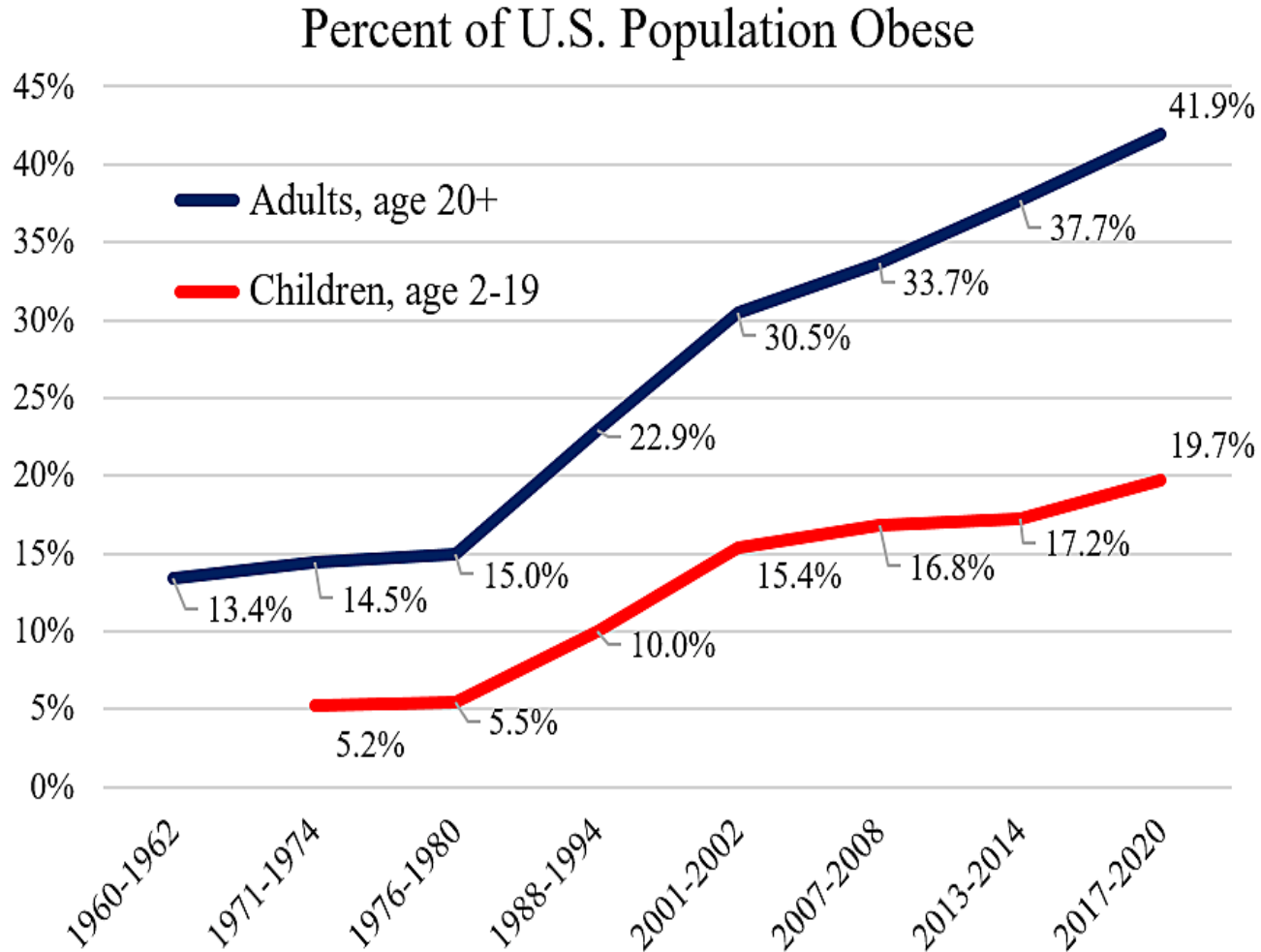
Notes: Comparable countries include Australia, Austria, Belgium, Canada, France, Germany, Japan, the Netherlands, Sweden, Switzerland, and the U.K. See Methods section of "How does U.S. life expectancy compare to other countries?"

Source: KFF analysis of CDC, OECD, Australian Bureau of Statistics, Japanese Ministry of Health, Labour, and Welfare, Statistics Canada, and U.K. Office for National Statistics data • Get the data • PNG

Peterson-KFF
Health System Tracker

1st in spending, 48th in life expectancy

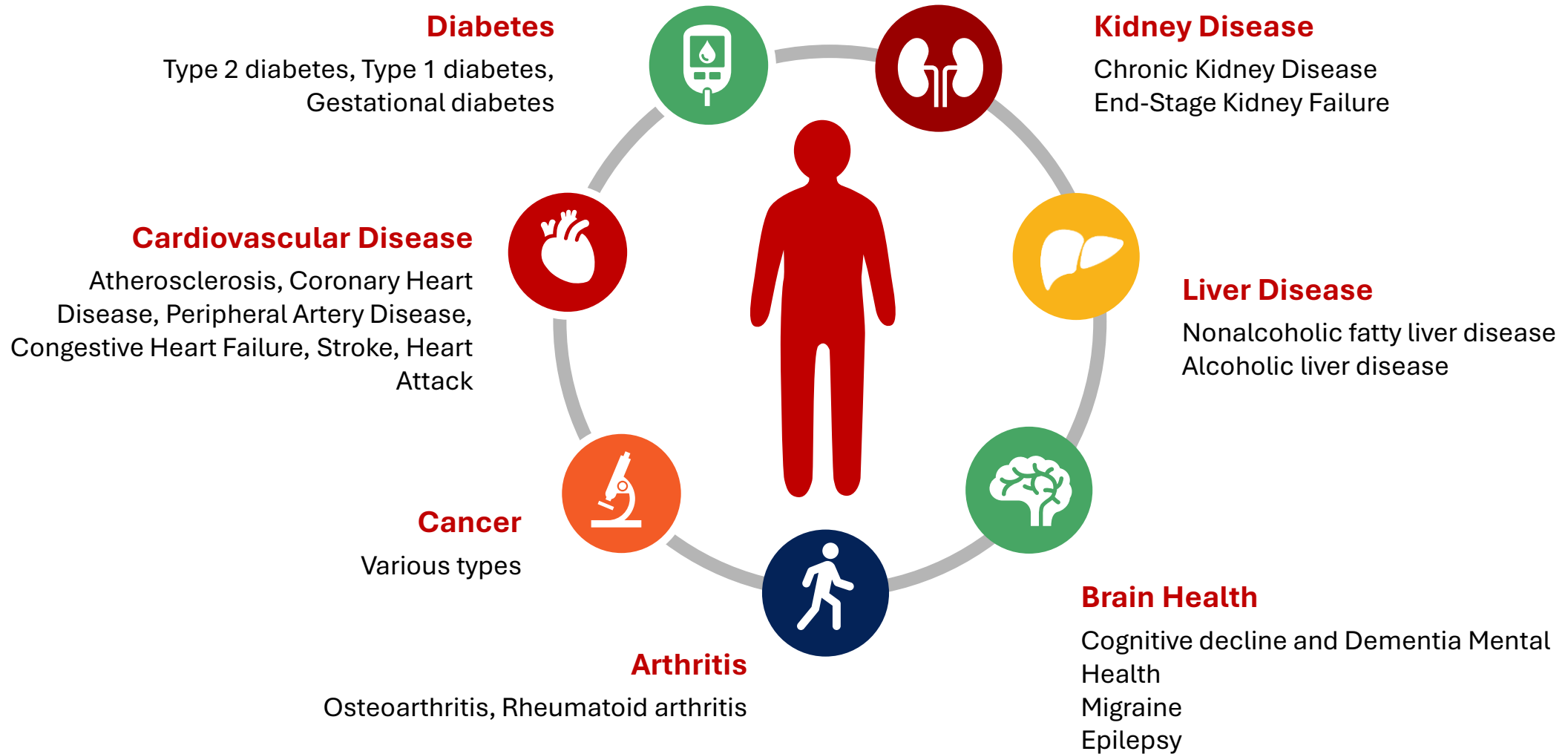
Rise in obesity is driving increase in heart disease, diabetes, cancer, health costs



Main drivers:

- Increased caloric consumption
- Significant increase in sugar intake (beverages, ultraprocessed foods, fast food)

Food Is Central To Health Outcomes



45% of deaths from Cardiovascular disease, stroke, and diabetes are associated with suboptimal diets



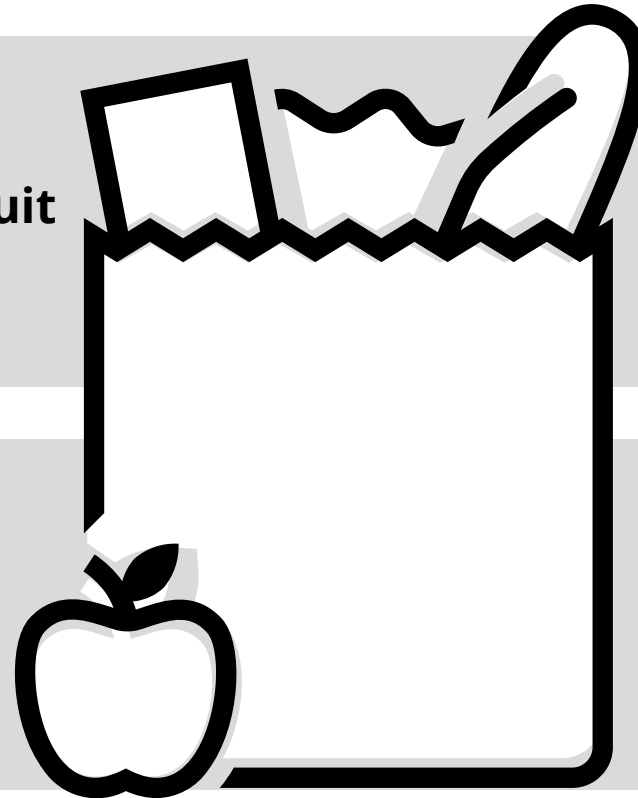
Only 1 in 10 Americans meet recommended fruit and vegetable intake

More than 9 in 10 Americans have excess sodium intake



2% of Americans meet whole grains targets

Americans consume more than 60 pounds of sugar each year



Adults Meeting Fruit and Vegetable Intake Recommendations — United States, 2019. MMWR Morb Mortal Wkly Rep 2022;71:1–9.
Prevalence of Excess Sodium Intake in the United States — NHANES, 2009–2012. MMWR Morb Mortal Wkly Jan 2016; 64(52):1393-7.

US Department of Agriculture, HHS, Dietary Guidelines for Americans, 2020-2025: 2020; 9th Edition
National Health and Nutrition Examination Survey 2017–March 2020 Prepandemic Data Files Development of Files and Prevalence Estimates for Selected Health Outcomes.

NHSR No. 158 Jun 2021

Micha, Penalvo, Cudhea et al JAMA 2017

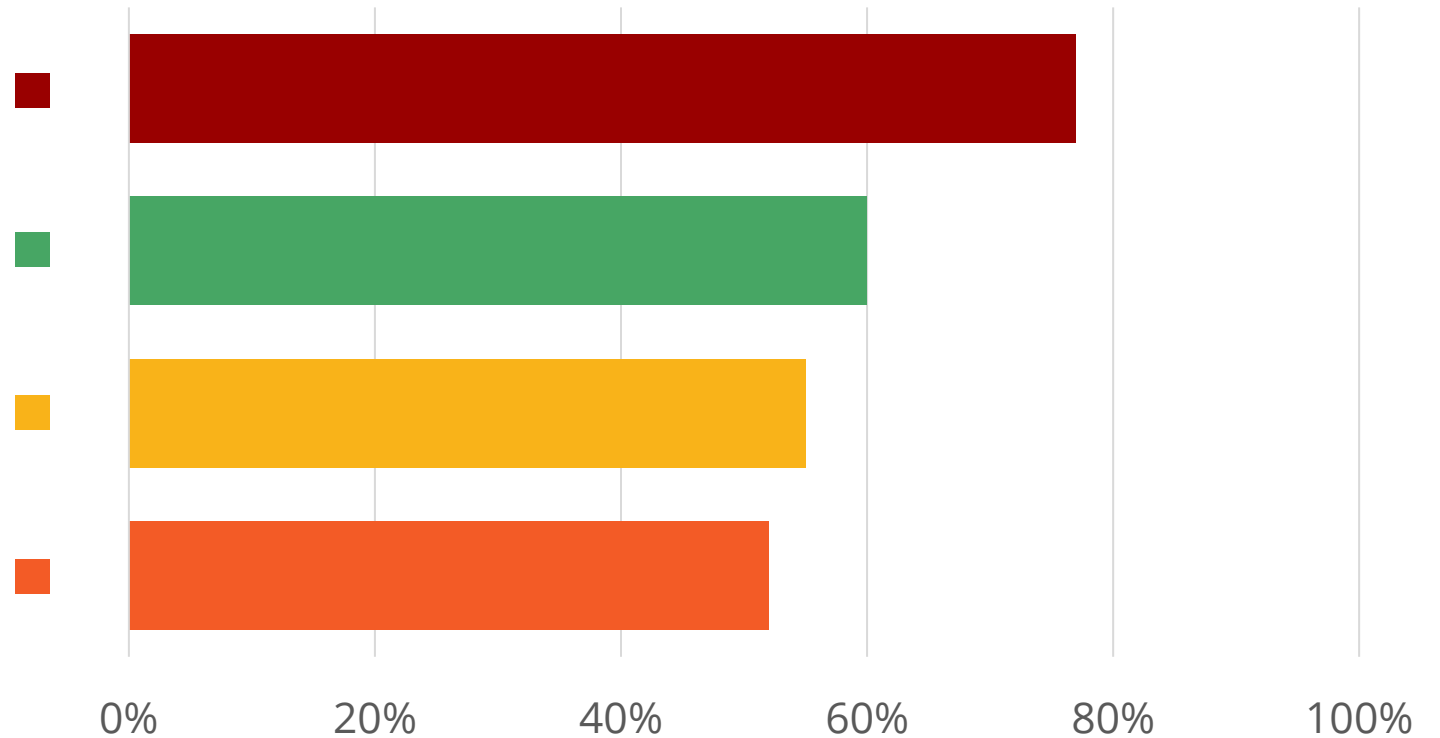
Affordability is a significant barrier for many Americans

77% of Americans would like to have **healthier diets**

The top barrier to eating a healthy diet is the **cost of healthy food (60%)**

55% indicated that it often happens that children are eating cheap, unhealthy foods so their families can **pay the rent**

52% indicated that seniors often have to choose between **paying for prescription drugs or paying for food**



What do we mean by Food is Medicine?

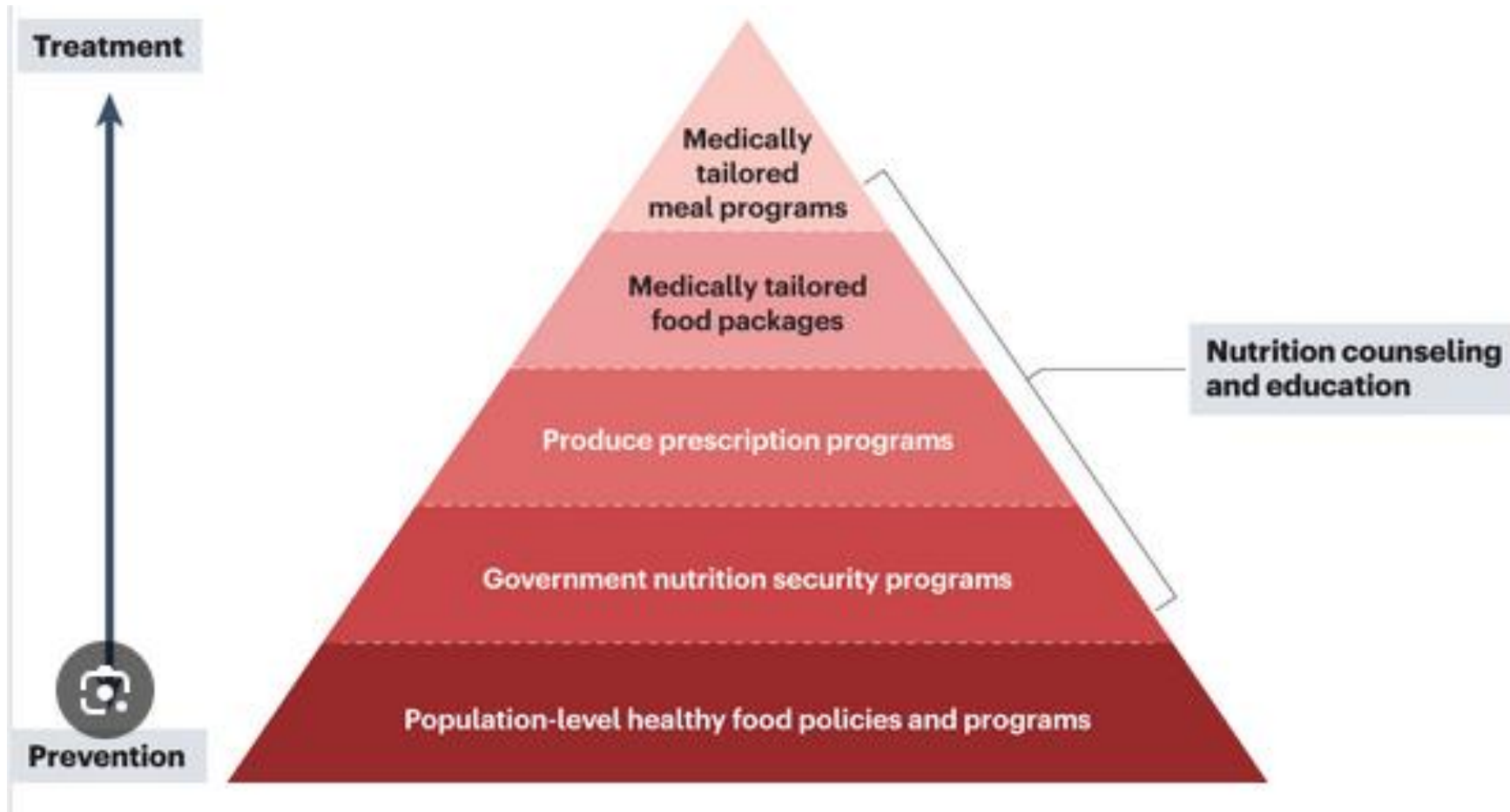
DEFINITION: The provision of healthy food resources to prevent, manage, or treat specific clinical conditions in coordination with the health care sector

EXAMPLES

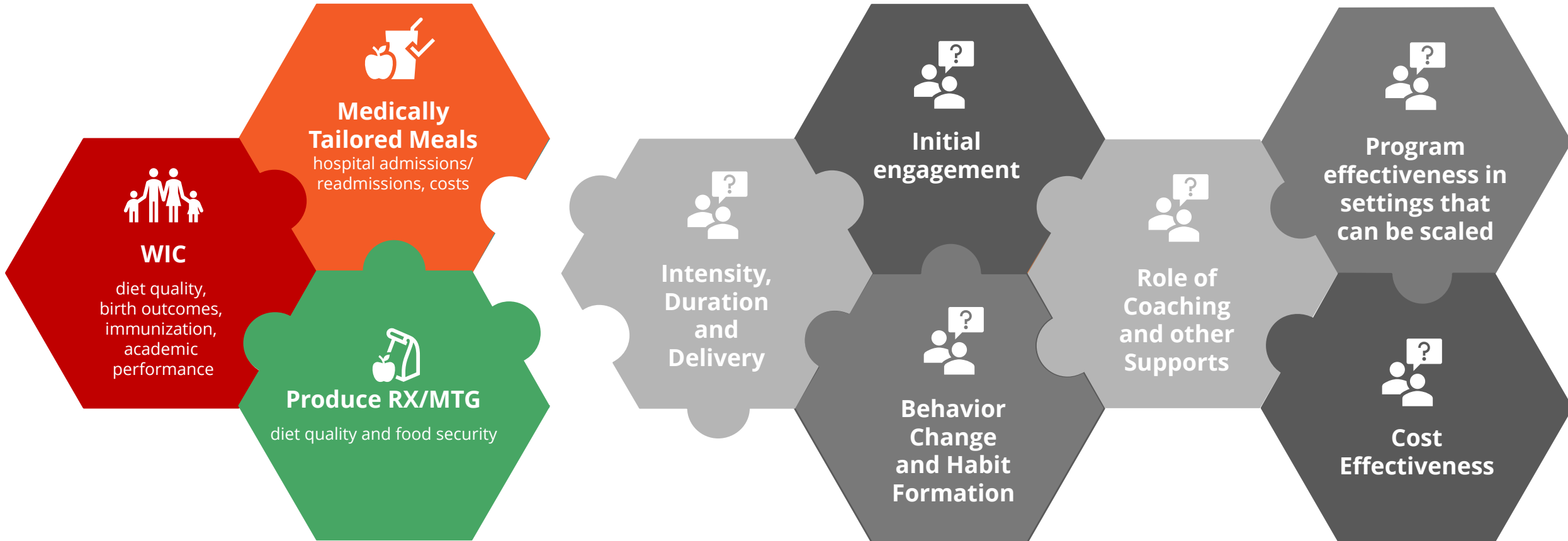
***Sally Smith** is a call center employee who has struggled with her weight, resulting in diabetes and hypertension. She would like to eat more healthy foods but given her income can't afford this. Her doctor was considering putting her on a GLP1 but instead 6 months she enrolled in a Food is Medicine produce prescription program providing her with \$80 a month of vouchers to use on produce. With this she has lost 15 pounds and her diabetes is much better controlled. Her doctor no longer thinks she needs a GLP1*

***Lucas Thomas** is a janitor who has been hospitalized several times in the past few years with heart failure. He knows he should eat healthier food but really likes McDonalds and lives alone. After his third hospitalization in 6 months he was enrolled in a medically tailored meal program in which he gets 14 dietitian-curated pre-prepared meals per week. He has not been readmitted to the hospital in the 6 months he has been on the program. The program cost his employer about \$3,500 in contrast to the \$34,000 it spent on hospitalizations the previous 6 months.*

Where Food is Medicine fits in



Key questions that need answering to define covered benefits



Existing Evidence

Gaps in Evidence to Address



April 22, 2019

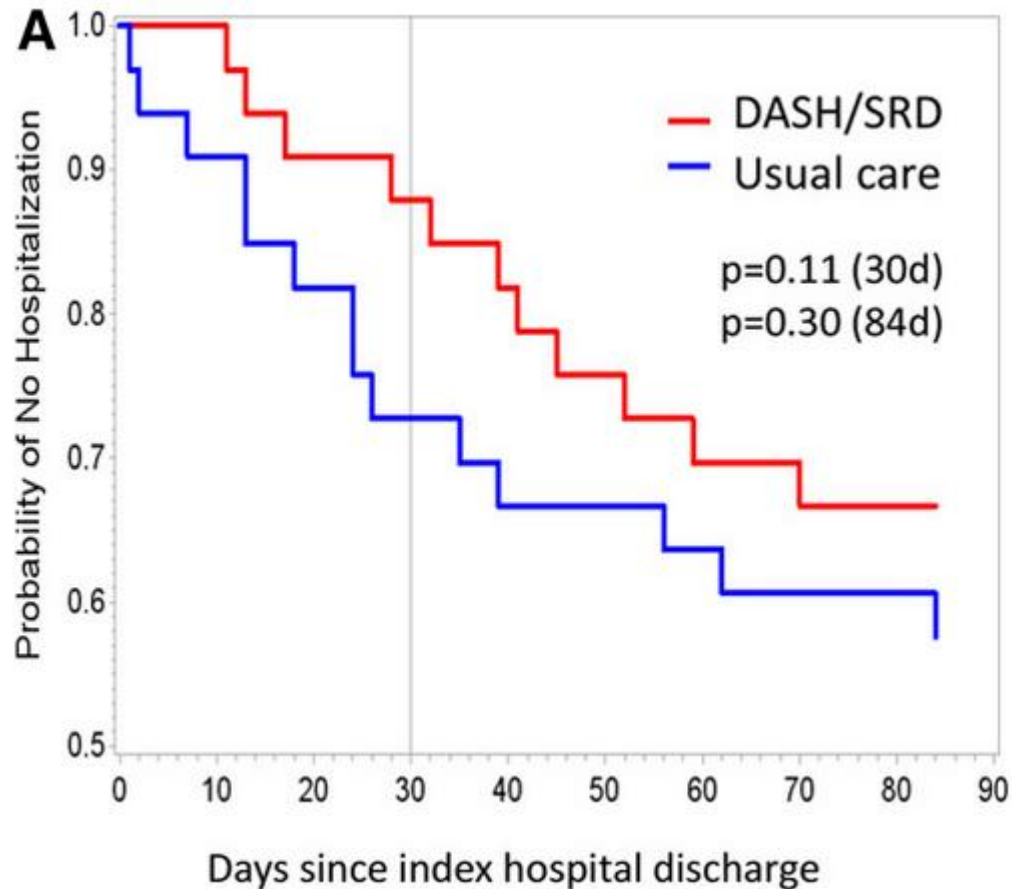
Association Between Receipt of a Medically Tailored Meal Program and Health Care Use

Seth A. Berkowitz, MD, MPH^{1,2,3,4}; Jean Terranova, JD⁵; Liisa Randall, PhD⁶; Kevin Cranston, MDiv⁶; David B. Waters, MA⁵; John Hsu, MD, MBA, MSCE^{7,8}

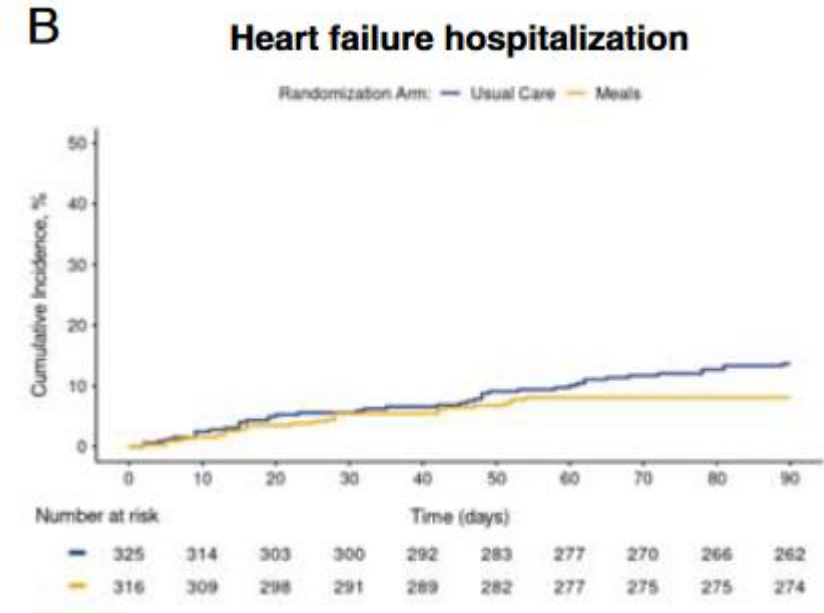


- MTM reduced inpatient admissions:
 - IRR 0.51 (95% CI 0.22-0.80);
- MTM receipt reduced skilled nursing facility admissions:
 - IRR 0.28 (95% CI 0.01-0.60);
- Significantly lowered mean monthly costs (including cost of meals):
 - \$3838 vs \$4591 (difference, -\$753; 95% CI, -\$1225 to -\$280)

Promising FIM results in patients with Heart Failure



- Hummel et al 30-day readmission rates 11% vs 27% (p.11)



Go et al 2022: (7.9% vs 13.2% 90-day readmission rate; aHR: 0.53, 95% CI, 0.33–0.88)

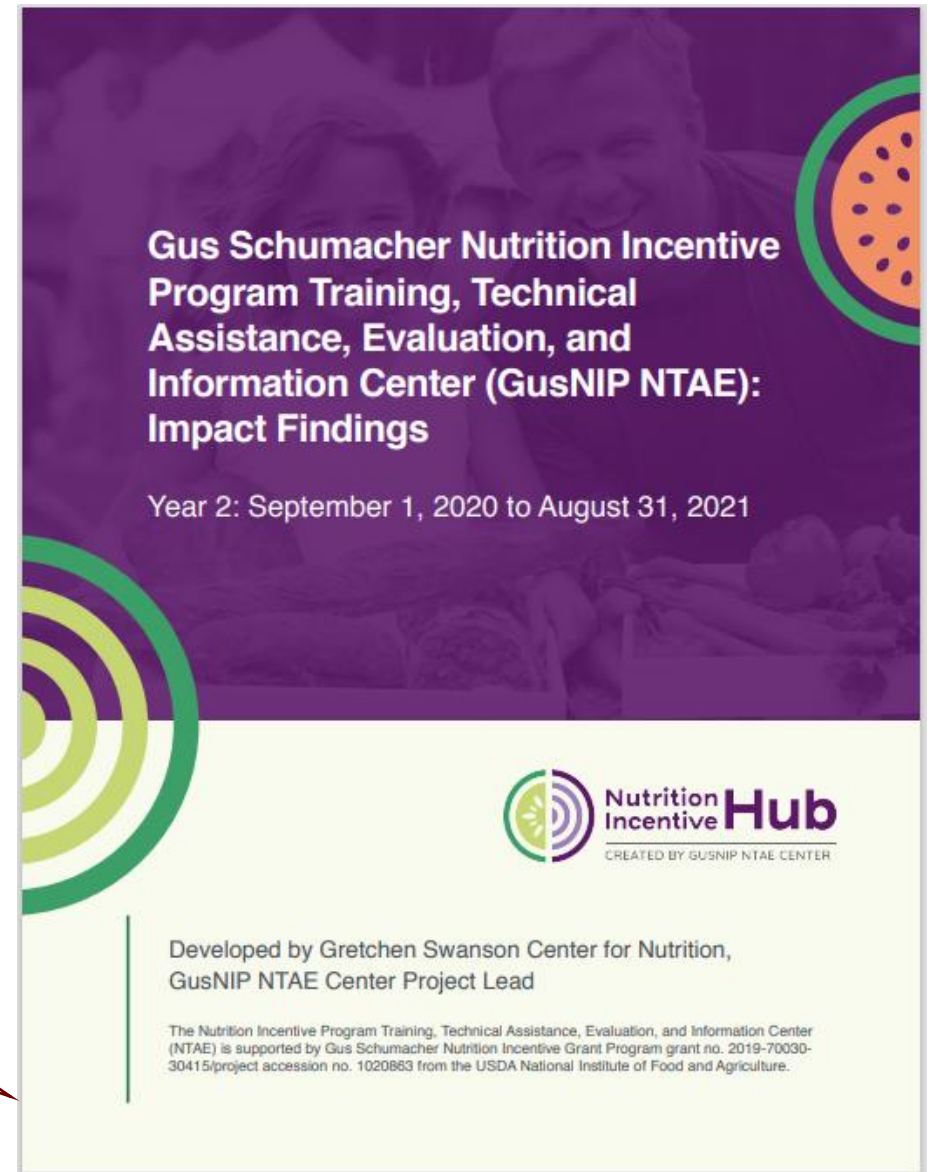


Sometimes people leave a lot of money on the table. . . need to make more salient that \$ will be lost if you don't use them

65%

Total Annual Benefits Utilization

Based on total incentives redeemed (\$579,995) as a proportion of total incentives issued (\$886,975) across 261 firms, hundreds of participants



Penn Medicine

Penn Medicine Food Market


ACME Markets
Delivery by 4-45pm

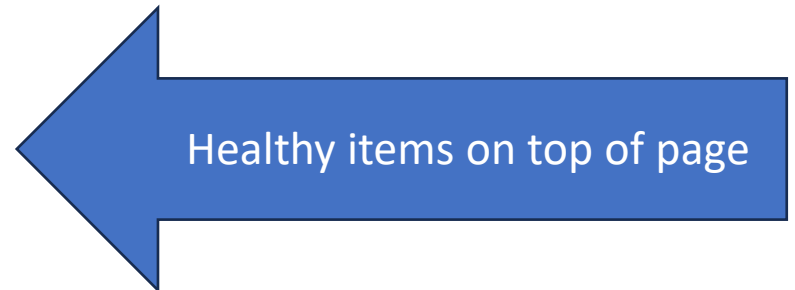
Available at 18 more stores

- Fresh Vegetables
- Fresh Fruit
- Frozen Vegetables
- Frozen Fruit
- Canned Vegetables
- Seafood
- Dairy
- Meat & Meat Alternatives
- Pantry
- Deli
- Bakery
- Frozen Foods
- Beverages
- Health Care
- Personal Care
- Household Essentials
- Baby
- Other Items

Fresh Vegetables

View all (400+) >

 + Add	 + Add	 + Add	 + Add	 + Add	 + Add	 + Add
\$4.99 Fresh Funds NatureSweet Cherubs Heavenly Salad Tomatoes 10 oz	\$4.69 Fresh Funds Green Giant Potatoes Mini Yellow, Idaho, Roasted Red Pepper 16 oz	\$2.99 Fresh Funds English Seedless Cucumber 1 each	\$4.69 Fresh Funds Green Giant Red Potatoes, Buttery Sea Salt & Pepper, Smas... 1 lb	\$5.93 each (est.) Fresh Funds Asparagus \$5.99 / lb About 0.99 lb each	\$8.99 Fresh Funds NatureSweet Salad Tomatoes, Heavenly 24 oz	\$2.93 each (est.) Fresh Funds Beefsteak Tomato \$3.99 / lb About 0.73 lb each



Penn Medicine

Penn Medicine Food Market

Walmart
Delivery by 5:00pm

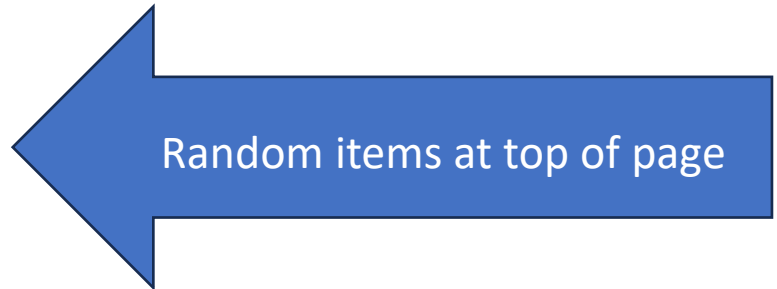
Available at 19 more stores

- Dairy
- Pantry
- Beverages
- Meat & Meat Alternatives
- Seafood
- Fresh Fruit
- Canned Vegetables
- Frozen Vegetables
- Frozen Fruit
- Frozen Foods
- Bakery
- Deli
- Health Care
- Personal Care
- Household Essentials
- Baby

Dairy

View all (900+) >

 + Add	 + Add	 + Add	 + Add	 + Add	 + Add	 + Add
\$5.01 Great Value Milk, Vitamin D, Whole 1 gal Many in stock	\$5.16 Pete and Gerry's Organic Eggs, Organic, Brown, Free-Range 12 ct ★★★★ (2.14K)	\$1.24 \$1.98 Rollback Imperial Vegetable Oil Spread Sticks 16 oz	\$3.97 Violife Just like Cream Cheese Original, Dairy-Free Vegan 7.05 ct ★★★★ (122)	\$4.42 Great Value Grade A Large White Eggs 18 ct	\$5.30 Spend \$55, save \$10 Silk Plain Almondmilk Yogurt Alternative 24 oz	\$4.93 \$5.48 Rollback Philadelphia Original Cream Cheese, for a Keto and Low Carb... 8 oz

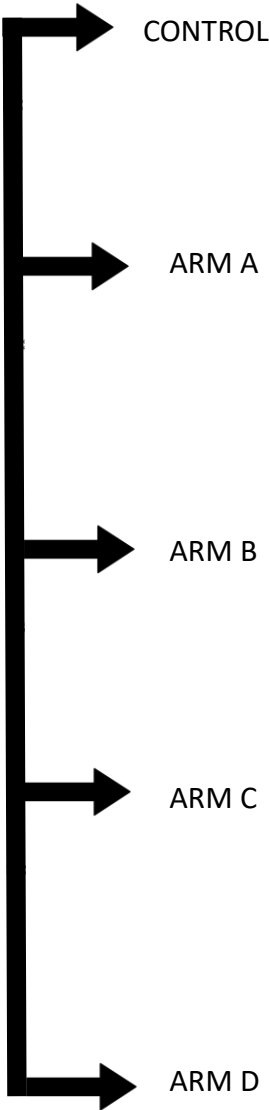


Study Design: 5 arm RCT (n=180)

All arms receive Instacart+ (free service/delivery) and up to \$175 in participation incentives

Potential participant (A1c>8, BMI>30) receives a text introducing the study and inviting them to enroll

Participant completes consent form and baseline surveys, including a Diet ID dietary assessment
\$25 Incentive



CONTROL
REMINDER

ARM A
REMINDER SUBSIDY: \$160 per month

ARM B
REMINDER SUBSIDY CHOICE ARCHITECTURE

ARM C
LOSS FRAMING SUBSIDY

ARM D
LOSS FRAMING SUBSIDY CHOICE ARCHITECTURE



A1c testing + Exit Surveys
\$75 Incentive

7 highest and lowest spending participants each month invited for semi-structured interview
\$50 Incentive



Comments from Participants

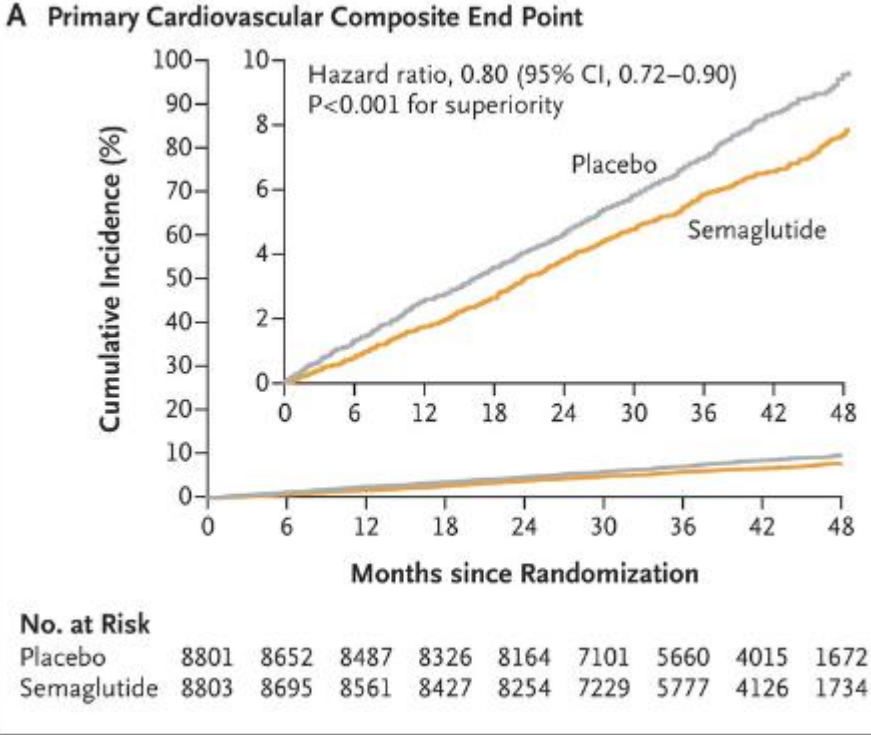
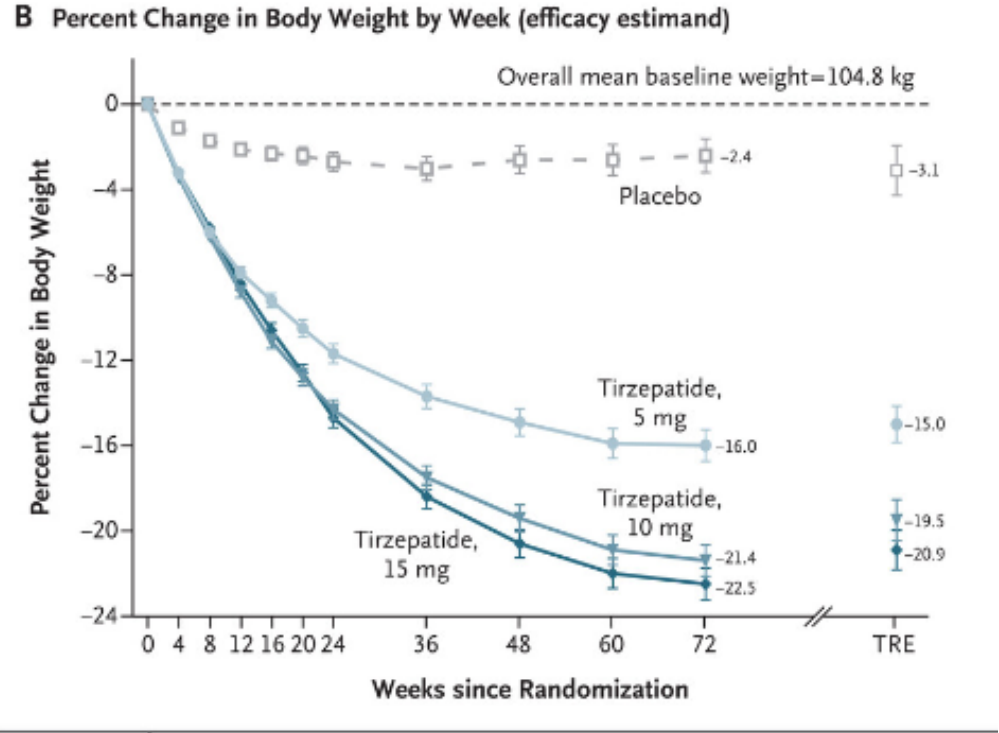


- 40 yo woman with multiple jobs, diabetes, lost her vision for two months, forcing her to take leave from work
- - *“So in my community, what are we gonna go first for? The supermarket that cost \$30, or the McDonald’s that cost \$3? You’re gonna go for the \$3 because it’s economical. By you all giving me this discount, it helps me be able to afford health fruits and vegetables. I have now \$80 worth of healthy fruits and vegetables for the last two weeks, and that was really, really good.”*
 - Lost 17 pounds this month
- *55-year-old unemployed, disabled woman. She reported struggling with diabetes over the years:*
 - *“People spew mumbo jumbo about why people don’t eat healthily without the experience of what it’s like to not have enough money to shop that way. You have access to food, but it’s only certain food. . .when people have access to doing better, then people are responsible. They’re diabetic, they know they should eat better. But the reality is rice is \$1 and filling, bread fills things up. A cucumber could be 75 cents”*

I have heard GLP1s are a miracle drug. . .



Significant impact on weight and reducing cardiovascular events...



What percentage of people put on GLPIs discontinue use within one year?

- A: 10%
- B: 20%
- C: 35%
- D: 45%
- E: 65%

What percentage of people put on GLP1s discontinue use within one year?

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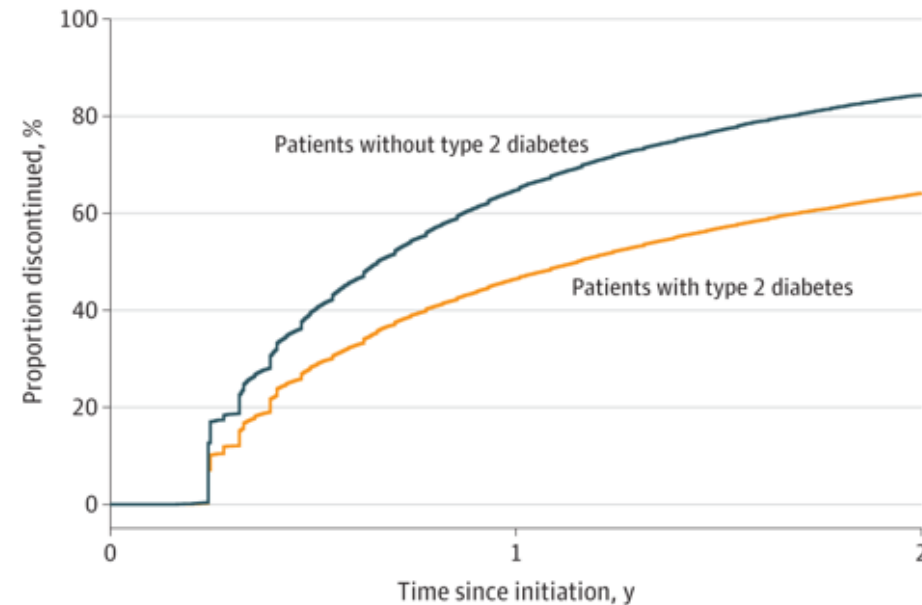
D: 45% for those with diabetes

E: 65% for those without diabetes

GLP1 Challenges include...

- Cost – roughly \$1 trillion annually to cover all eligible obese people in US
- High cost means that those who can't afford often don't coverage
- 45-65% discontinue in 1 year
 - Combination of cost, GI side effects, loss of mean muscle mass
- Discontinuation impact
 - People regain 2/3 of prior weight loss with cardiometabolic markers returning towards baseline within 1year

A Time to discontinuation of GLP-1 RA



No. at risk

Q and A

Contact: volpp70@wharton.upenn.edu





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Systems Design

Community & Health Foundations Convening
Philanthropy Southwest



Stacey Chang

Principal, New Origin Studio

February 26, 2025



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Disclaimer

Statements, opinions, and study results presented in this presentation may not reflect the policy or science position of the American Heart Association, unless otherwise noted.



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What Good Looks Like

It's not hard to imagine a better future for the big social challenges we face.

A Layer Deeper

It's not even hard to rationalize how that new future would be beneficial for most of the stakeholders involved.

Getting There

It is hard to describe, with any confidence, a logical linear pathway that brings us directly to that imagined future.

Complex Adaptive Systems

Our most difficult modern challenges reside in non-deterministic, socially-constructed systems.

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The system's behavior arises from the dynamic interplay between inherently **unpredictable stakeholders, both because there's no single overarching **authority**, and because they respond their individual **incentives** be wildly different.**

Complex Adaptive Systems

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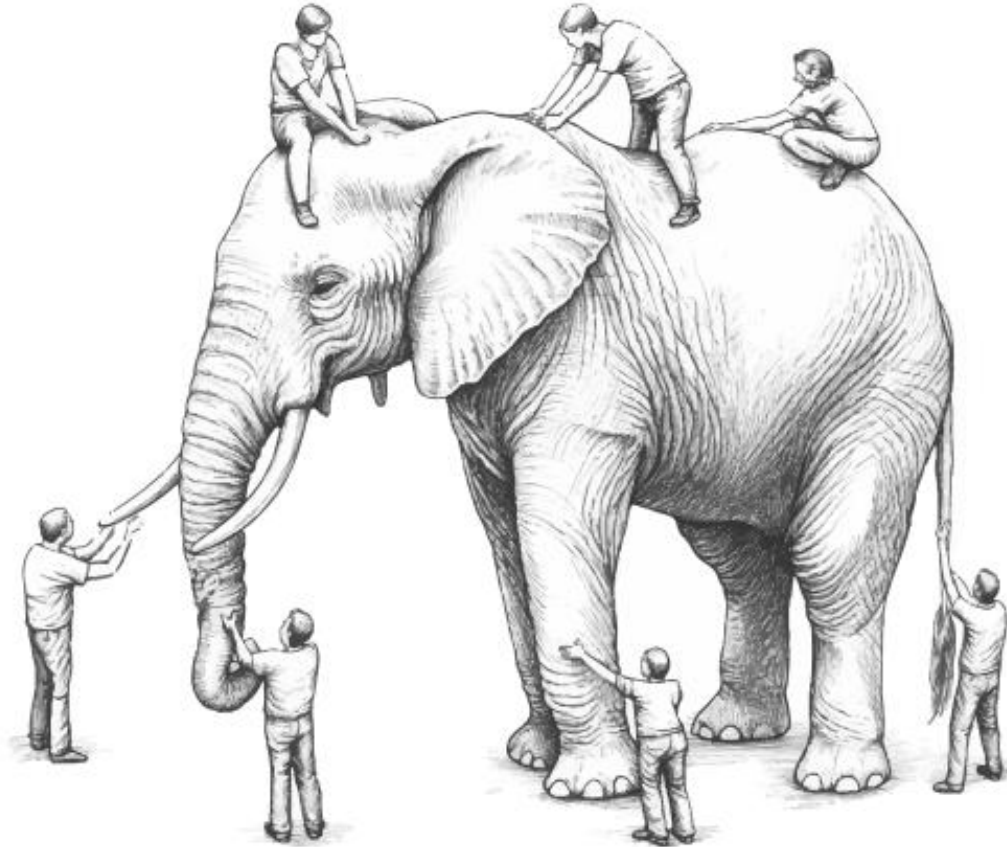
The system's behavior arises from the dynamic interplay between inherently **unpredictable stakeholders, both because there's no single overarching **authority**, and because they respond their individual **incentives** be wildly different.**

And so it is with **Food is Medicine.**

Complex Adaptive Systems

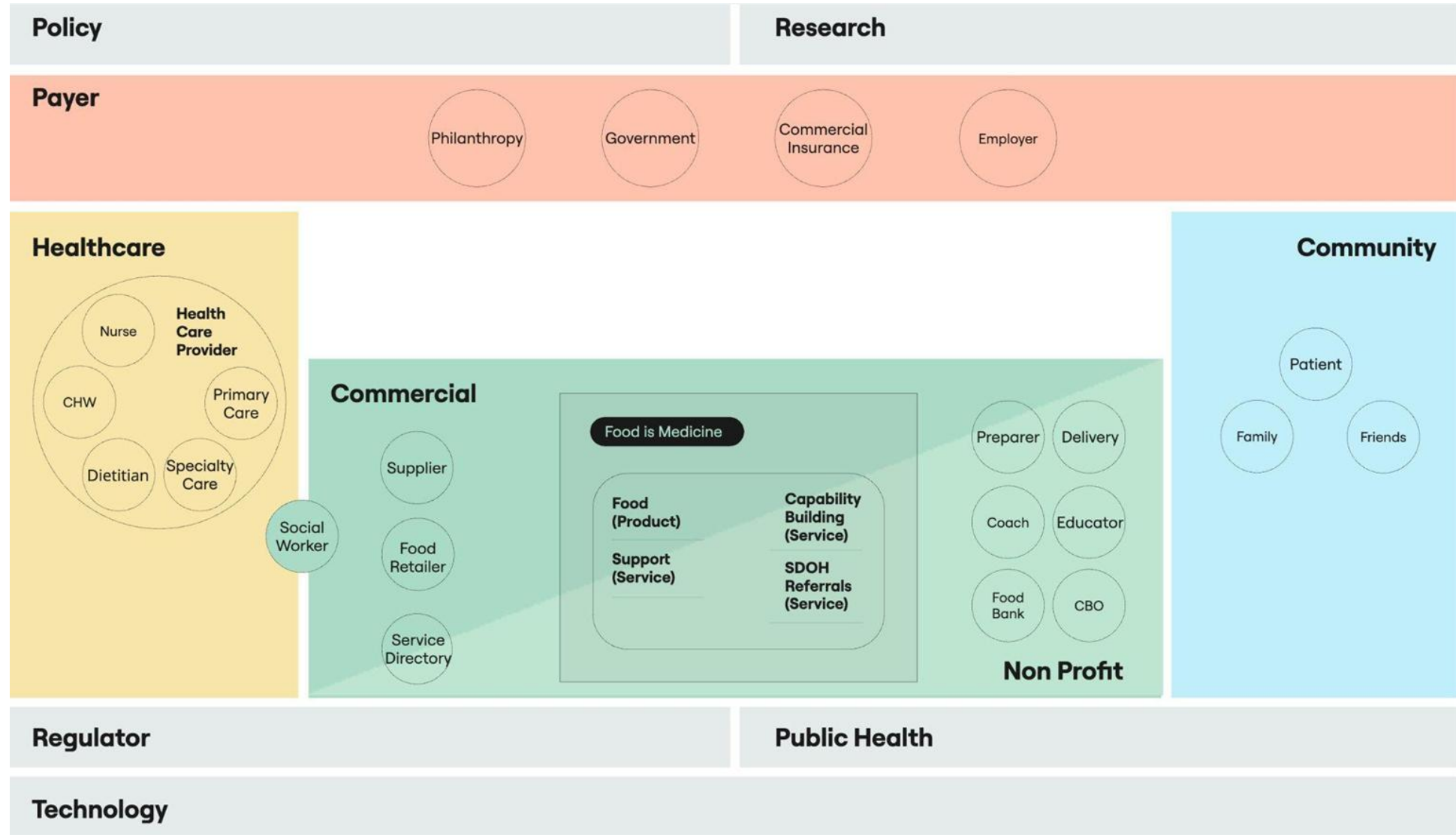
Wrangling complex adaptive systems requires a set of approaches that honors their decentralized and reactive nature.

I. A Common View

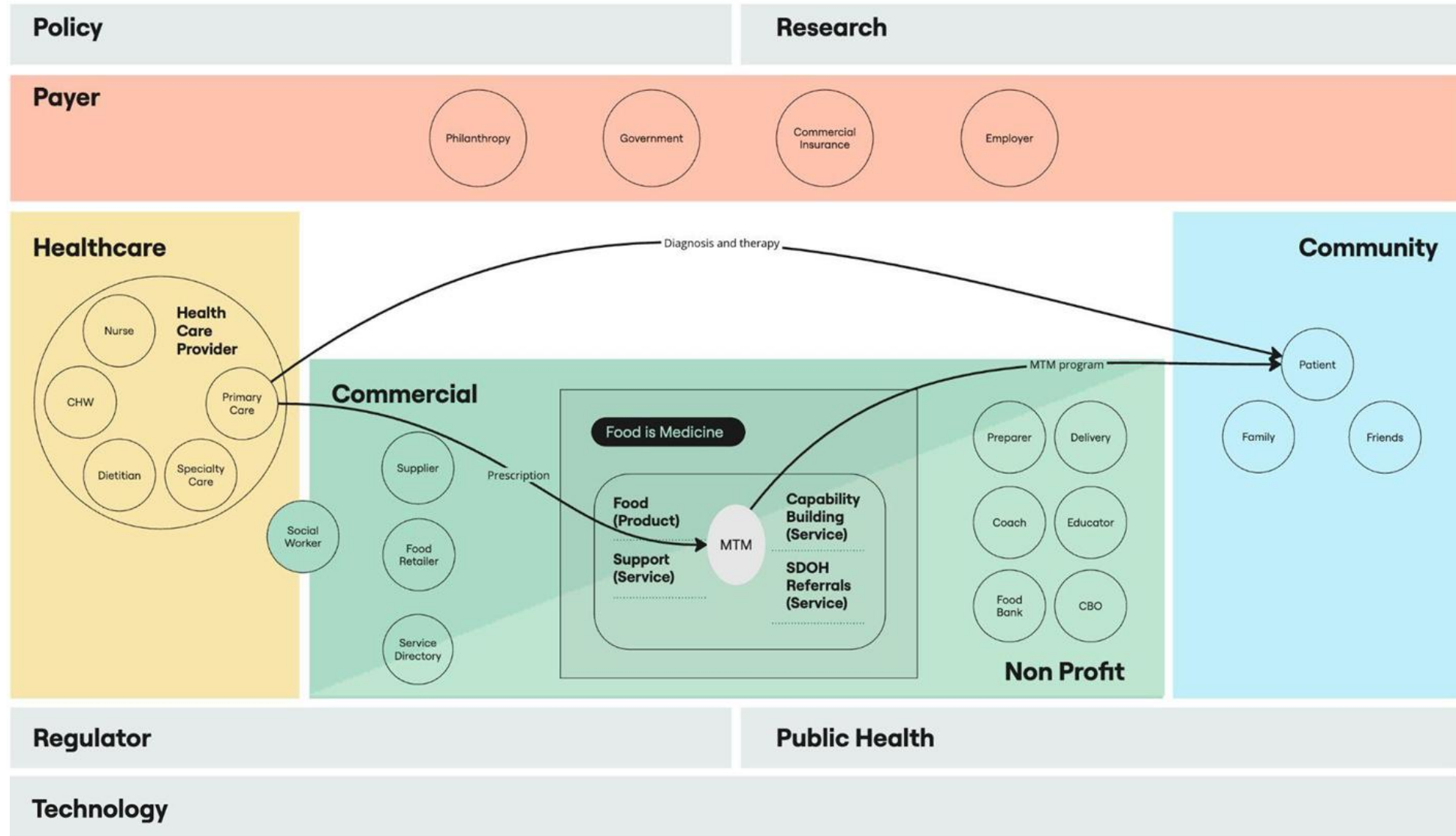


**Seeing the whole system together
is the first step in wrangling the beast.**

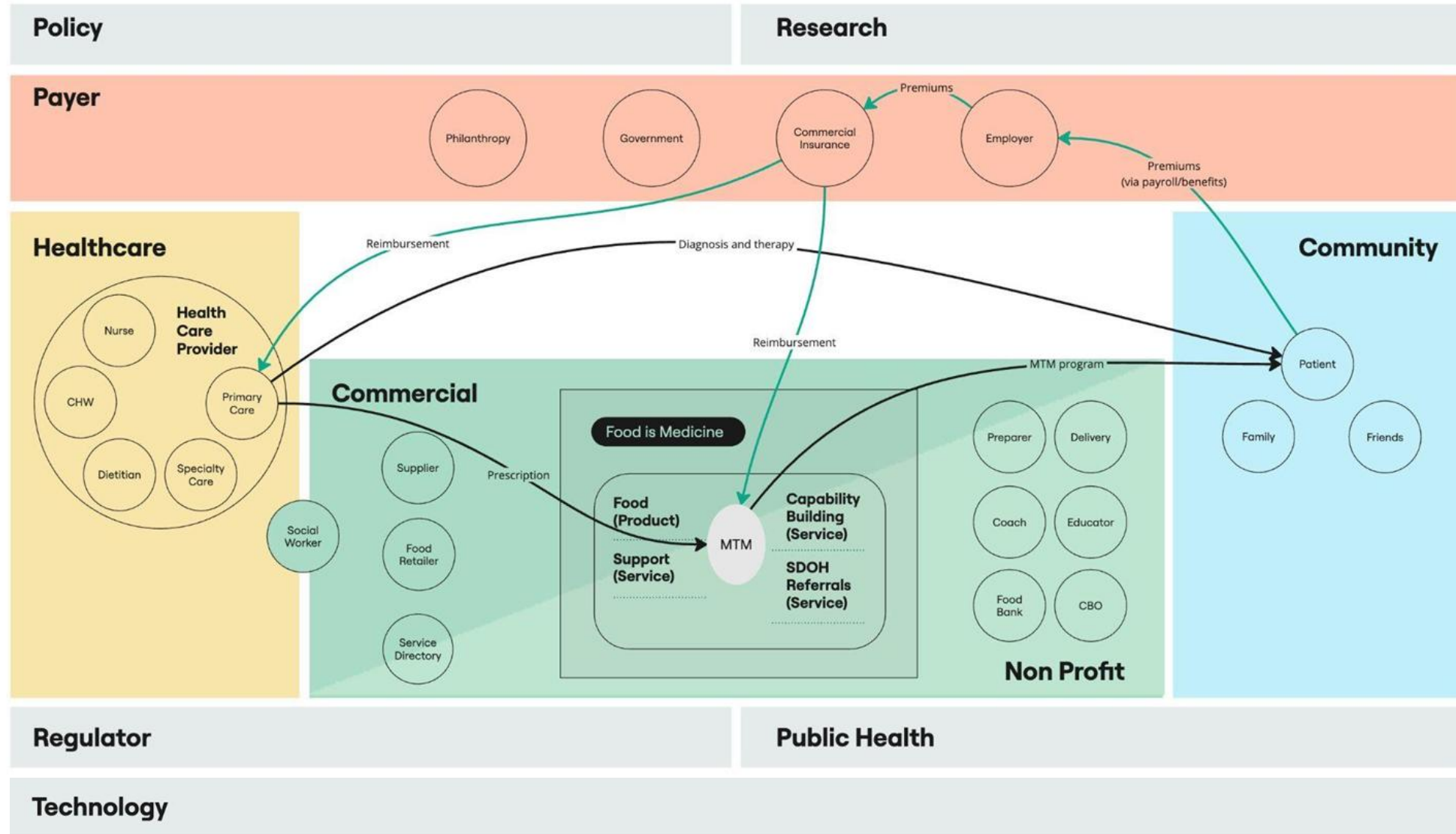
System mapping



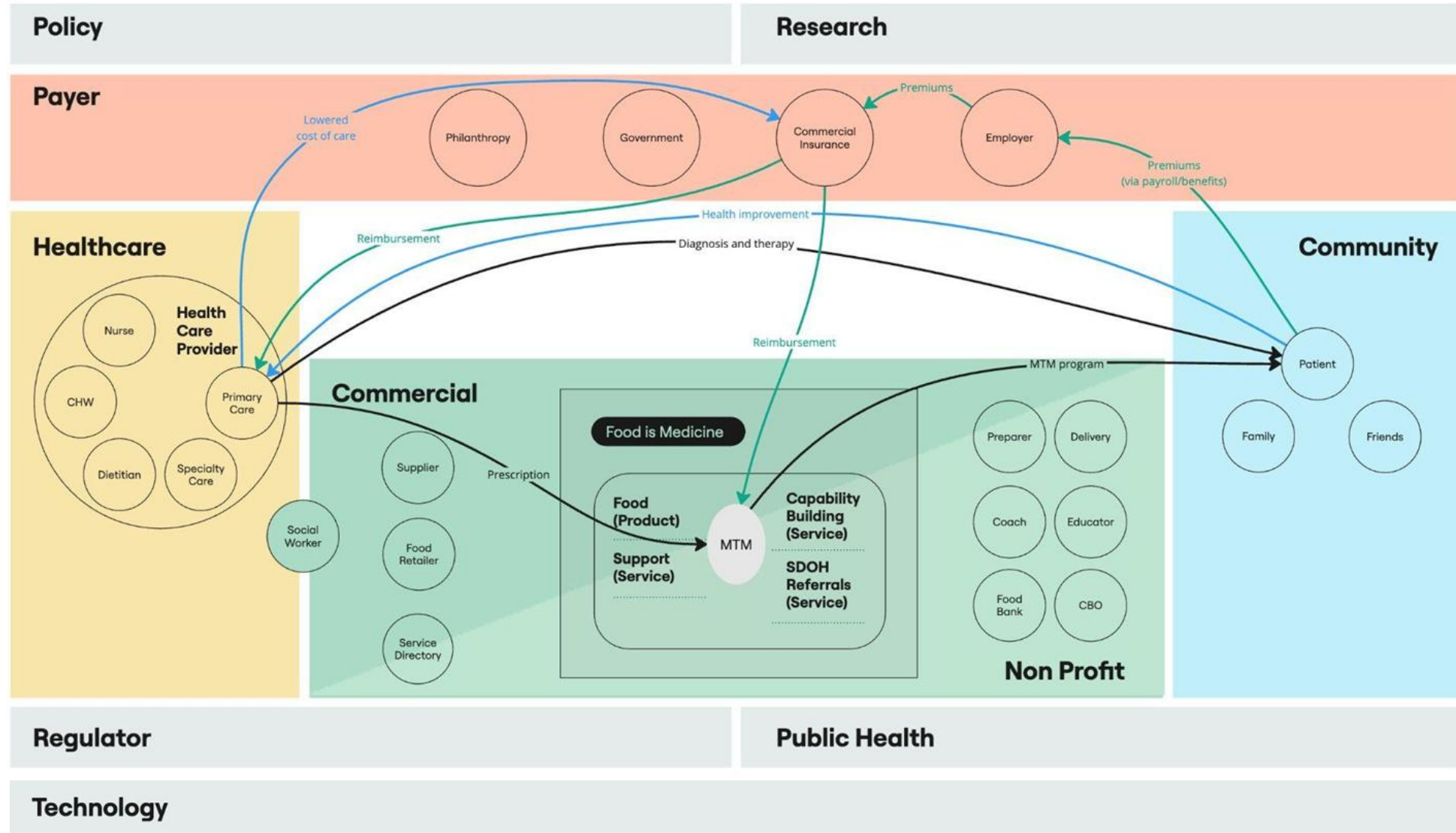
System mapping



System mapping



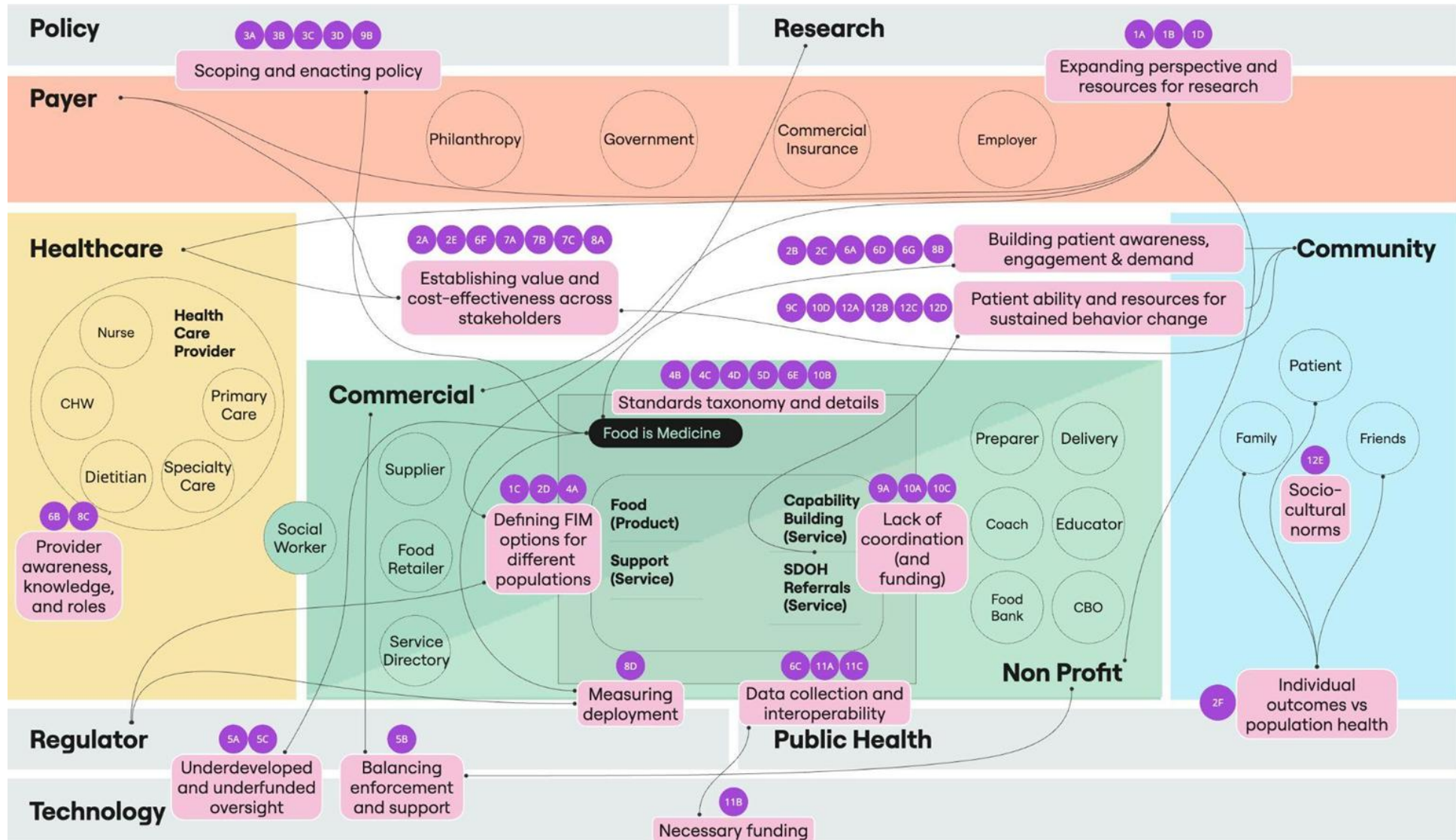
System mapping



2. Collective Interrogation



System Gaps and Opportunities



3. A System Strategy and Collective Action



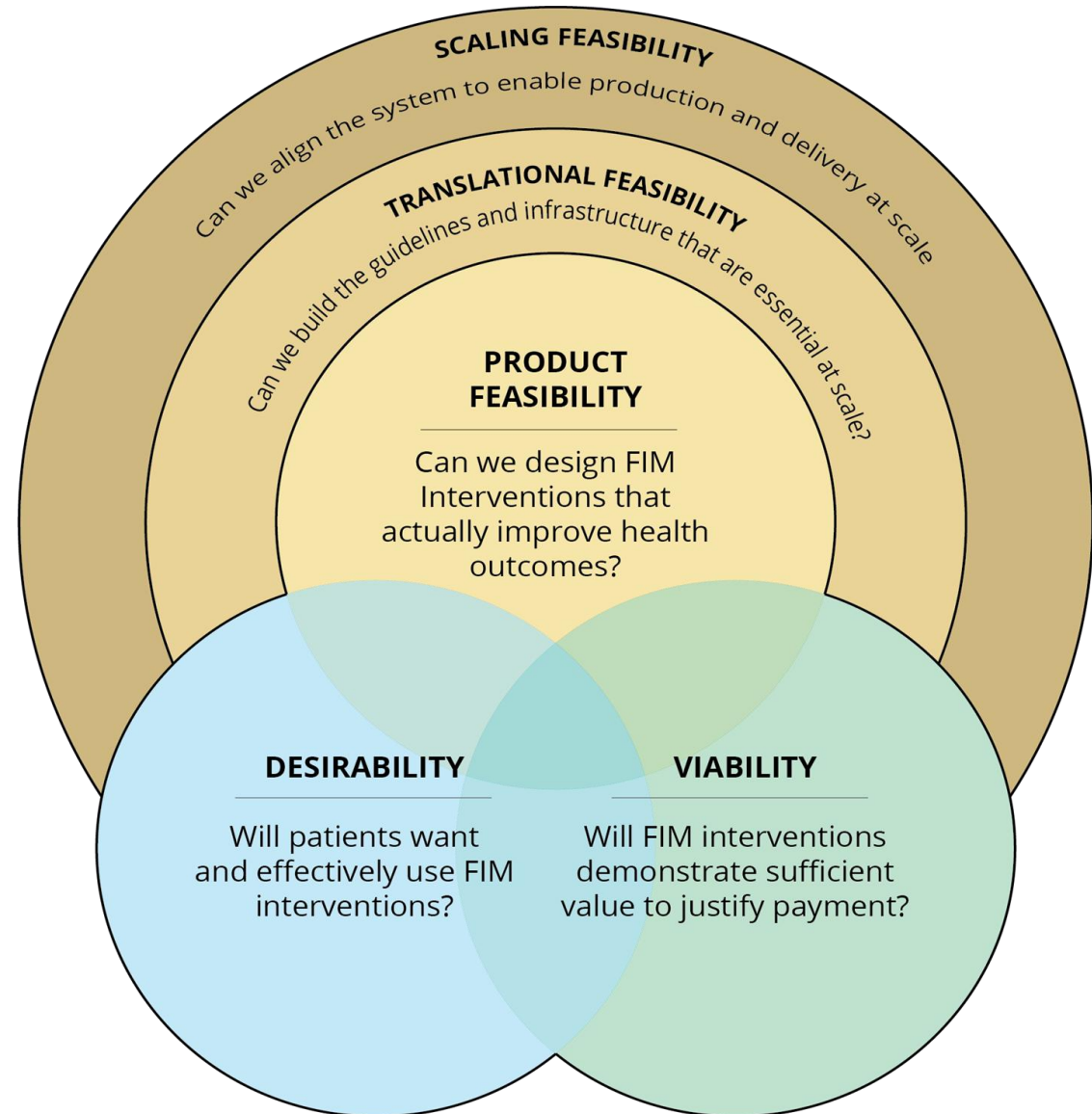
HORIZON 1 - Designing FIM



HORIZON 2 - Establishing Standards



HORIZON 3 - Scaling the Field



A Systems Design Approach

1. A Common View

1. Collective Interrogation

1. System Strategy and Collective Action



Thank you!