

sight and life

**WHY
INVEST
IN CONSUMER
INSIGHTS?**

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INSIGHTS**

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Welcome

Consumer Insights

From jigsaw pieces to the 'big picture'

Imagine a jigsaw puzzle of a vibrant nature scene in which all the individual pieces contribute to the big picture. Each piece contains elements that make it unique and that are also part of the overall image. This is why one needs to understand the bigger picture as well as its individual pieces, if one is to fully appreciate the jigsaw. The big picture teaches us what we should expect from the smaller pieces.¹

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“Gaining consumer insights means looking at the big picture of people’s lives in the round”

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Gaining consumer insights means looking at the big picture of people’s lives in the round – understanding how people think, feel and act with respect to a certain product, service or behavior. This can include looking at: consumers’ emotions, wants, preferences, aspirations and needs; the costs they incur to purchase and own goods and services; the convenience of obtaining goods and services; and/or what makes communication between the entity and the consumer more effective.²

Developing a better understanding of customers is increasingly a strategic necessity for private and public sectors alike, because fast-moving markets, new technologies and new business models are changing what customers want, how they shop and how they access services. In less than two decades, ‘consumers’ and our understanding of them have evolved as a result of increased product choice and growing access to, and availability of, information. These changes are also apparent at the base of the pyramid. A body of literature on the growth of emerging economies has contributed to a shift in mindset, such that base-of-the-pyramid consumers are increasingly being viewed as value-conscious and resilient entrepreneurs.

Affordability is necessary, but it is no longer sufficient to explain consumer behavior at the base of the pyramid, as it is just one piece of the jigsaw. Consumers are motivated not merely by

survival and physiological needs; they also seek to fulfill higher-order needs – to build social capital, for cultural reasons or as a compensatory mechanism.⁴ In addition, tastes and aspirations change rapidly and guide people’s purchasing and consumption choices. Evidence has shown that when organizations offer products and services that also fulfill these higher-order needs, there is a greater chance of these products succeeding in the market. On top of this comes the recognition that a better approach is needed to help those at the base of the pyramid – one that involves partnering with consumers to innovate and achieve sustainable win-win scenarios in which they are actively engaged while, at the same time, the companies providing them with products and services can operate at a profit.⁵

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“Affordability is necessary, but it is no longer sufficient to explain consumer behavior at the base of the pyramid”

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These shifts have motivated many public-sector organizations to rethink the way that they view their target audience: from being the ‘beneficiaries’ of public goods, services and behavior change interventions, to being promising consumers, entrepreneurs and active participants in the process of change.

The ‘nutrition’ consumer

The jigsaw analogy can be equally helpful for appreciating the importance of the ‘big picture’ in understanding and positively influencing consumer food choices and eating behaviors.

Eating behavior is governed by a complex set of determinants, some of which people are not even aware of when making their choices. Therefore, studying and addressing eating behavior from a health and nutrition perspective alone is equivalent to viewing just a few pieces of the jigsaw in isolation. People do not think in terms of ‘nutrients,’ and more often than not they do not think in terms of health when purchasing and consuming food. They think in terms that matter most to them, which are influenced by their internal and external environments. In the

words of Robert Zoellick, former head of the World Bank (2010): “People don’t live their lives in health sectors or education sectors or infrastructure sectors, arranged in tidy compartments. People live in families and villages and communities and countries, where all the issues of everyday life merge. We need to connect the dots.”⁶

“Consumer food choices are shaped by a long list of interconnected factors”

Governments play a critical role in shaping food systems and defining what is available and affordable⁷ and in trying to influence what is desirable. But consumer food choices are shaped by a long list of other interconnected factors. The more obvious ones include taste, cost, time and convenience.³ But this list goes on to include: values, culture, social norms and expectations, knowledge,⁴ desires and aspirations, and – not least important but often least considered – our emotions.

As a growing body of evidence suggests, the nutritional context is becoming more complex; the emergence of the ‘dual burden’ of overnutrition and undernutrition in individuals and populations is presenting a particular challenge. The ability to address this dual burden requires a systems approach,⁶ starting with an understanding of the very people who are interacting with, being influenced by and influencing this system.

The evolution of consumer insights as a discipline

New advances in behavioral science have shed light on the power of ‘irrationality’ in consumer behavior and decision-making. According to leading consumer scientists, 95 percent of our purchasing and consumption decisions may be formed in the subconscious mind.⁸ This is the part of the brain where logic takes a back seat and emotion grabs the wheel, and an understanding of it highlights how important it is for organizations to think about consumers’ deepest thoughts and feelings when developing products and services. Technological advances, such as artificial intelligence and virtual reality, along with continual innovations in traditional research methods, have paved the way for more efficient data collection and analysis of behavioral drivers and patterns.

“Organizations that have traditionally relied on information gathering are now seeking more creative views of their markets”

Organizations that have traditionally relied on objective information gathering (demographics, numbers, best practices) are now seeking broader, deeper and more creative views of their markets, leveraging behavioral science and technology to find fresh insights into the needs, wants, fears and hopes of their target consumer.⁹ In addition, public-sector organizations are increasingly seeing the value of consumer insights beyond designing communication campaigns; such insights can help to inform the design and redesign of health services, products, business models, marketing strategies and policies at large scale.

In this issue of *Sight and Life* magazine, which is dedicated to consumer insights, we have curated contributions that explore the various dimensions and applications of consumer insights. We look at innovative methods and tools for generating consumer insights and at trends in behavioral science as the foundation for understanding consumers. We present examples of consumer insights and how they have been applied to design products and services, using different approaches such as social and behavior change communication, human-centered design and social marketing. We also look at the use of consumer insights in advising and shaping programmatic and policy changes. We feature contributions on the value and implications of technological advances for understanding and catering to consumer needs, and we look at lessons learned from the commercial sector and the importance of consumer insights to create demand through public-private partnerships.

If you are still unsure about the value of consumer insights for public health, we suggest you turn to [page 34](#), where Dr Sufia Askari and Sarah Gibson from the Children’s Investment Fund Foundation (CIFF) discuss the question ‘*Why invest in consumer insights?*’ from a funder’s perspective.

For a deep-dive into the use of behavioral science for demand creation – and in particular the use of behavioral ‘nudges’ – we encourage you to read the article on Epicurean food marketing by Prof. Pierre Chandon, Director of the INSEAD-Sorbonne University Behavioral Lab, in which he explores the concept of *Epicurean food marketing* and unpacks different ‘nudge’ types, on [page 18](#).

To explore innovative behavioral analytics to generate consumer insights, start with our special feature *Behavior analytics, artificial intelligence and digital technologies – building bridges between biological, social and food systems* by Prof. Laurette Dubé on [page 110](#). For more on innovative research methods, we suggest you read *Human-centered design and innovative research methods for healthcare* by Estée Liebenberg of the Praekelt Foundation on [page 50](#). To appreciate the value of behavioral and psychographic segmentation in appealing to different ‘types’ of consumers, we recommend you read *Highlighting group differences: using segmentation to meet the needs of different types of people* by Anna Kitunen on [page 80](#), and

'Branding for people not topics' – what public health nutrition can learn from commercial marketing by Shiloh Beckerley and Jeff Jordan on [page 75](#).

To see what actionable consumer insights can look like, turn to [page 25](#), where *Sight and Life* together with Wahana Visi, a partner of World Vision, are featuring a research article entitled *Social marketing to promote egg consumption in Indonesia – formative research findings*.

For a better idea of how consumer insights can be used to inform the design of innovative products and services, take a look at *Designing future-fit food* by Jade Bourne on [page 69](#), and *Promoting maternal and child health through beauty parlors in Afghanistan* on [page 155](#) by Soumitra Ghosh.

On [page 145](#), Dr Mahmooda Khaliq Pasha discusses how consumer insights were used in a social marketing approach to inform policy and program design for *salt reduction in the Americas*.

We are also pleased to feature two reports on leveraging technology to design tailored solutions for consumers. On [page 85](#), Prof. Payal Arora highlights the importance of tailoring technological products aimed at improving health outcomes to the realities, wants and needs of the growing user base from developing countries – the *next billion users*, who are “demanding, sophisticated consumers who are desperately seeking quality digital products and services.” On [page 160](#), Tamsen de Beer describes how mobile technology was used in the design of the well-known *maternal health program MomConnect*.

And finally, we are honored to feature a special contribution. On [page 122](#), Bill Novelli, Professor at the McDonough School of Business at Georgetown University, and Diane Ty share with us their decades of experience in *applying deep consumer insights to purpose-led communication and purpose-led business initiatives*.

We hope you will enjoy this new issue of *Sight and Life* magazine. At *Sight and Life*, we have a growing Consumer Insights and

Demand Creation team. You will hear, in the near future, from the team leader about novel and innovative topics incorporating your feedback and your suggestions for future issues.

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With warm regards,

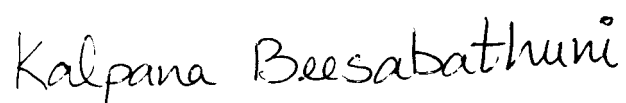
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A 'Sneak Peek' into Capacity Building at *Sight and Life*

Yana Manyuk

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At *Sight and Life*, one of our core strategic areas involves building public-private partnerships in nutrition. Through consumer insights, market research and private-sector expertise, we design, test and innovate viable (business) models that will increase supply and demand for nutritious foods for the reduction of malnutrition in all its forms. *Sight and Life* is currently actively engaged in public-private partnerships with UNICEF, the World Food Programme, World Vision and DSM, as well as OBAASIMA and initiatives such as Sizanani Mzansi.

**“Building our partners’ capacity
to strengthen programmatic efforts
in demand creation is an
exciting journey”**

Building our partners’ capacity to strengthen programmatic efforts in demand creation is an exciting journey. One recent example is a three-day social marketing training we conducted in Jakarta in September 2019, as part of the Joining Forces for Last Mile Nutrition partnership between DSM, *Sight and Life* and World Vision, together with local partners DSM Nutritional Products Indonesia and Wahana Visi (a partner of World Vision). The training was part of a joint capacity-building effort, supporting the demand creation component of the EGGciting project, which aims to build supply and increase demand for egg consumption among pregnant and lactating women and children under the age of five.

The aim of the training was to equip a cadre of Wahana Visi professionals working on different field projects (focused respectively on agriculture, nutrition and health) with social marketing concepts, principles and tools. Social marketing is an evidence-based process that capitalizes on marketing concepts – product and service design, appropriate pricing, sales, distribution and promotion – to create demand for specific health and social behaviors. We chose social marketing as an approach rather than more traditional education and information approaches because we believe that it has the most potential to help the Wahana Visi teams around Indonesia to accelerate the uptake of health and nutrition behaviors and products.

The training combined brief knowledge-sharing sessions and practical group exercises, which allowed the participants to apply learned concepts and principles to real-life behavioral challenges that are relevant to their work in the field. To make the training as applicable to the participants’ fieldwork as possible, groups of participants worked on actual health- and nutrition-related issues, such as stunting, maternal malnutrition and infectious diseases caused by lack of hygiene.

In a range of interactive and creativity splurging exercises using case study examples, participants put on a social marketing hat and developed audience profiles, practiced using research to generate key actionable insights for a social marketing campaign and then used these insights to design a social marketing intervention mix.

The training started with a deep dive into human behavior, or what we know of it, looking at the basics of why people do what they do and what motivates change.

Because many behaviors can contribute to a single health and nutrition issue, participants were first asked to define the behaviors contributing to the issue they were working on. They were then requested to prioritize those behaviors that they regarded as easiest to tackle and which, if tackled successful-



Behavior Change is often about changing people's daily habits and introducing new routines

"To market a new habit – be it groceries or aerobics – you must understand how to make the novel seem familiar"

Charles Duhigg, *The Power of Habit*

Remember this?

- ❖ Other people's behavior matters (social norm)
- ❖ Habits
- ❖ Convenience
- ❖ People's self-expectations influence how they behave
- ❖ People are loss-averse
- ❖ People are bad at computation when making decisions
- ❖ People feel rewarded, experiencing positive emotion
- ❖ People perceive value for themselves

Sample training slides used to encourage discussion about behavior change





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Teams involved in group activities during the training



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Group activities involved a great deal of thinking and discussion



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A participant receives her certificate of attendance from Yana Manyuk

ly, would have the greatest impact on the problem. Next, they selected audiences who were most affected by the issue and identified stakeholders whose engagement was critical for the success of a given project. Finally, groups worked on defining how much they already knew about their audience and which knowledge gaps they had to fill, making a plan for conducting further research.

On the last day of training, each group was asked to 'pitch' how they would approach tackling their assigned health and nutrition issue, using a social marketing approach. In their pitches, each group answered the following questions, which closely resemble the questions social marketing and other behavior change practitioners are frequently asked in real life: What is

the problem you want to address? Why is this important? Why do you intend to use social marketing to address this problem? (What is social marketing?) Which behaviors are you planning to change and why? Are you intending to conduct formative research and why? What resources do you need?

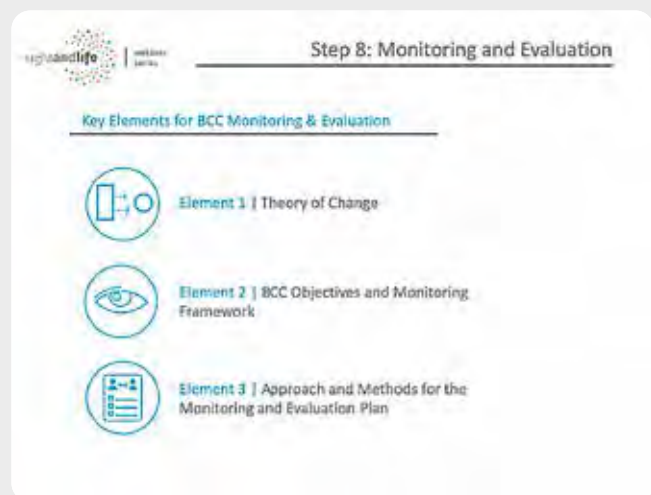
For the pitches, a panel of stakeholders was invited, acting as representatives of the Ministry of Health, an international donor agency and an academic institution. The best pitch won a fictitious donation to realize their plan.

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To learn more about our face-to-face trainings on demand creation principles and process, contact us at:
info@sightandlife.org

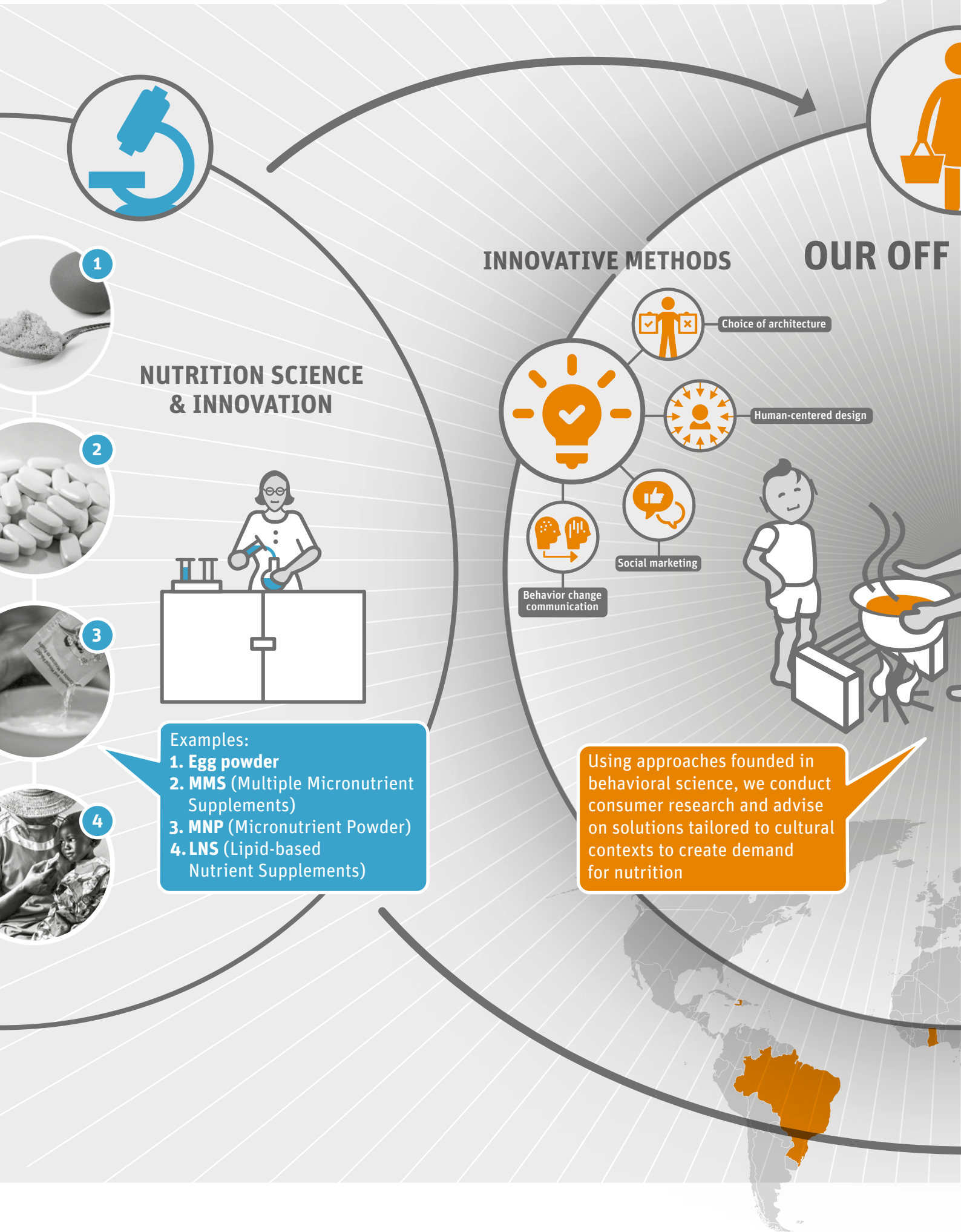
Want to learn more about capacity building at *Sight and Life*?

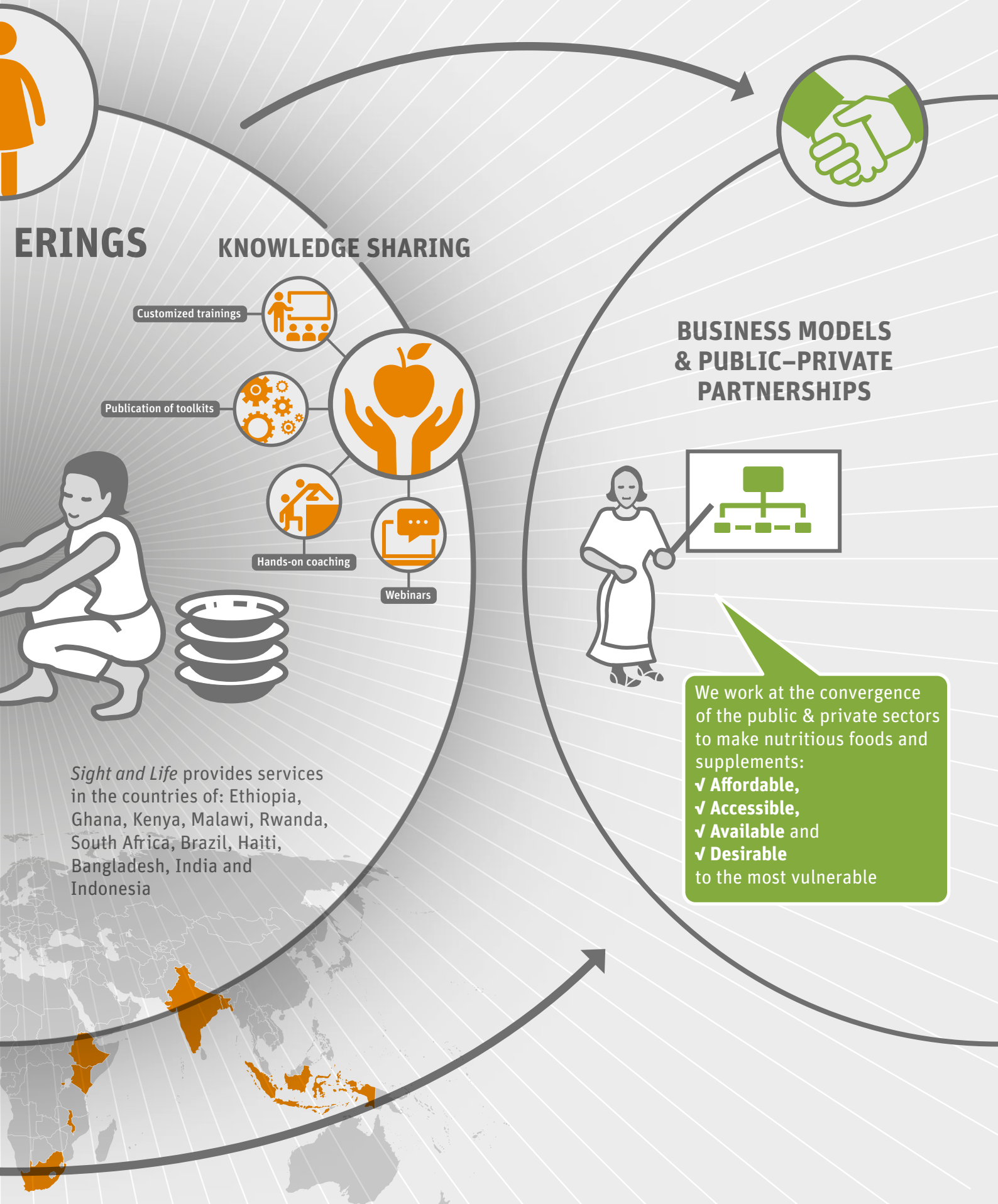


Take a look at our webinars on designing step-by-step behavior change interventions. This four-part webinar series presents evidence-based concepts along with the principles and processes of behavior change design in an easy-to-follow, visual and fun way: sightandlife.org/resources/#videos-podcasts



Sight and Life's Consumer Solutions





Plant-Based Meat Products

Back to the fundamentals

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There is no such thing as ‘simple’ when it comes to nutrition. More than 30 years of working in this field have taught me that important lesson. Be wary of ‘simple,’ ‘JUST’ (*pun intended*), ‘only,’ ‘one-size-fits-all solutions,’ and the promise of yet more ‘magic bullets’ ...

Don’t be too quick to judge, don’t be too eager to be appalled, don’t be too keen to rely on any information that is being fed to you. Not yet, at least. Take your time to understand the gaps that need to be addressed. I give myself this advice every now and then, and especially when a sensational headline comes to my attention. And let’s be honest, we haven’t been exactly sheltered from those lately! My in-box has been jammed to bursting with screaming headlines that orbit a topic about which I care deeply – namely, the role of protein in human nutrition and its rightful place in our diets in the context of an environmentally challenged planet.

From Impossible Foods to Beyond Meat and JUST products (you name it!), there seems to be an endless welter of ‘nutritious’ plant-based products coming onto the market. Innovations in food technology have made these alternatives taste like meat or eggs – a quantum leap compared with what was called TVP (textured vegetable protein) by Archer Daniels Midland (ADM) in the 1960s, and was made from soya protein. However, the flavor and mouthfeel of TVP didn’t make it a product that consumers aspired to eat.

The new generation of plant-based alternatives has been fueled by ‘cheap money’ and an unprecedented availability of venture capital to fund innovations in food – not in nutrition. Impossible Foods, for instance, has raised more than US\$750 million from a long list of institutional and celebrity backers including Bill Gates, UBS, Google and Khosla Ventures along with Serena Williams, Katy Perry, Jay-Z and Trevor Noah, to name but a few.

While this may sound promising to some, the unsavory truth is that these food innovations may not in fact be as healthy as they would like to appear. This shouldn’t come as a surprise to us, as the development of these foods was never really about *health*. You can’t fool even the least nutrition-conscious individual about the true nature of these highly processed vegetarian or vegan products. To make no mention of the high levels of sodium, saturated fats and food additives they contain, or their prevailing lack of essential micronutrients.

Clearly the appealing marketing message was about finding alternatives to meat for the sake of the environment and not our health, and rightly so: if we are looking to mimic the complete sensory experience of meat and meat products, we must accept that in the course of this journey unforeseen trade-offs may exacerbate the already existing dilemma of empty calories in our diets.

On the other hand, the EAT–LANCET report has significantly contributed to this growing debate, and despite the criticism it has endured from the nutrition community (and justly so in some instances), I welcome the way it has spurred discussion on this topic.

So, are meat alternatives an opportunity or a threat? More of a *missed* opportunity, I would argue. The fact that the companies that produce them are addressing only one side of the problem is a completely missed opportunity. We urgently need to rigorously scrutinize the nutritional effects of these new meat alternatives. To date, no efficacy trials have assessed the nutrition and health effects of plant-based meat products such as Impossible Burger or Beyond Burger compared with those of real meat. And if the nutritional component is weak, that’s when the real work needs to begin.

“We urgently need to rigorously scrutinize the nutritional effects of these new meat alternatives”

There is much to learn from the way sources of protein other than meat have been researched and are still in the process of



“The new generation of plant-based alternatives has been fueled by an unprecedented availability of venture capital to fund innovations in food – not in nutrition”



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Researcher inspecting a meat sample in a laboratory. Finding a replacement for all the beneficial nutrients that are obtainable from animal-source foods is not a ‘quick fix’

thoroughgoing analysis. Take the example of insects – was that all merely hype? By no means. First, however, a list of important research questions needs to be addressed in order to guarantee the safety of the product; and second, the product’s contributions to nutrition must be better understood.

Findings from a recent study conducted by Melse-Boonstra et al.¹ – the first that looked into the bioavailability of minerals from edible insects in humans – points to the need for further investigation into the anti-nutritional properties of insects *before* promoting them as an alternative source of iron. The iron bioavailability of recombinant soy hemoglobin in the human diet (you have correctly noticed the Impossible Burger’s key ingredient for making it taste, look and feel like meat – and made, incidentally, by a genetically modified organism) was only tested some 15 years ago in Caco-2 cells, which are human intestinal adenocarcinoma cells that have been used for nonheme iron bioavailability studies. At the time, the study’s objective was to *introduce* the concept of using plant hemoglobin as a heme iron source in human diets and to promote further research in this area.²

Today, this is still the only piece of research we have in the area of soy hemoglobin iron bioavailability, but alternative meat products of this type are still hitting high-end restaurants

and chains, and are already available in supermarkets. What is perhaps even more worrying is the fact that heme iron is one of the candidates for why high amounts of beef and other red meats might cause cancer. To this day, we do not fully understand how red meat increases the risk of cancer, and on the basis of that ignorance, salving one’s environmentally challenged conscience by doubling the consumption of heme iron from soybean in the form of a processed plant burger is not exactly recommended ...

By the way, the Beyond Burger, with a supply of micronutrients that is close to zero, has an even longer way to go.

So, if you’re looking for an environmentally conscious alternative to eating meat, look no further, and have that burger! (Although be warned that unknown externalities are most likely to surface once you get really stuck into it.) However, if you’re looking to find a replacement for all the beneficial nutrients that are obtainable from animal-source foods – such as bioavailable iron and zinc, vitamin B₁₂, essential amino and fatty acids, selenium and choline – then I *urge* you to think again. Likewise, if you’d simply rather not put your health at risk because of the unknown or unstudied consequences of these novel types of food, then the simplest answer to your question may be the practice of moderation.

So, are meat alternatives an opportunity or threat? Maybe a little bit of both – but before we go on, there are more fundamental questions to address that are currently not receiving sufficient attention.

I believe that significantly more attention should be given to the question of *how* workable alternatives to meat might be developed. Dismissing the inevitable marketing speak about ‘flavor,’ ‘texture,’ ‘umami’ and ‘mouthfeel,’ let us start with the proposition that the nutritional composition of any meat alternative should mirror the nutritional composition of the meat it is designed to replace. This might never be entirely technically feasible, but it should be an aspirational starting point. For if the experience of the past 50 years has taught us anything about nutrition, it is that we do not need yet more empty calories being produced in the factories of the rich and foisted on consumers via a food system that is designed to serve the makers of food, and not the individuals who consume it.

“Our society has produced enough bad food. We know exactly how to do it, and we do it very well.”

My view is that everyone involved in the development of potential meat alternatives – funders, researchers, producers, distributors and marketers – has a deep responsibility. Our society has produced enough bad food. We know exactly how to do it, and we do it very well. What the world urgently needs are models for the production of alternative protein sources that are not only sustainable, and not only ethical, but above all nutritious. A rich nutrient profile with a minimum of processing should be the aspiration of everyone engaged in the search for viable meat alternatives. And it is the job of nutritionists to get the attention of the world on this matter.

The most important issue that remains to be addressed in all this is the potential risk that consumers face. ‘How to put consumers at the center?’ is a question that drives our work at *Sight and Life*. We know that people make irrational choices about food and that information isn’t everything. Not only is it hard to translate science into layman’s language; it’s even harder to change behavior by rational argumentation alone.

This new edition of *Sight and Life* magazine sheds light on the range of complexities, intricacies, inspirations and innovations that surround consumer insights. The time has come to turn the tables and take ownership of a field that has far too long served up cheap and empty calories rather than nutritional wellbeing.

Welcome to the world of Consumer Insights for global public health nutrition, where Science extends a hand to Art to unravel the complexities of human behavior in a world whose resources are, as we are all coming to acknowledge, very finite.

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Epicurean Food Marketing

Aligning business and health by making eaters happier to spend more for less food

Pierre Chandon

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Key messages

- > Food marketers can no longer ignore the impact of their actions on customers' health and wellbeing.
- > The standard solution – food reformulation – is limited by 'health halos' (the tendency to overeat foods that are perceived to be healthy) as well as by the dissolving consensus on what makes a food healthy.
- > Epicurean marketing shifts the focus from what we eat to how much we eat: from health and nutrition to making smaller portions more appealing.
- > Marketers must shift from selling food as fuel – making money by selling more calories – to marketing food as pleasure – making money by selling less food and more pleasure.

Food marketing has worked very well. Without giving it much thought, we routinely eat a great variety of foods that our grandparents would not recognize. This new food is safe, cheap and convenient, tastes great and almost always claims to be healthy for one reason or another. Food marketers are also great at creating placebo effects – for example, by making people feel drunker than they really are.¹

Indeed, food marketing has worked too well. It has contributed to a worldwide obesity epidemic, with consequences that range from the stigmatization of overweight people to Type 2 diabetes.

“Food marketing has worked too well: it has contributed to a worldwide obesity epidemic”

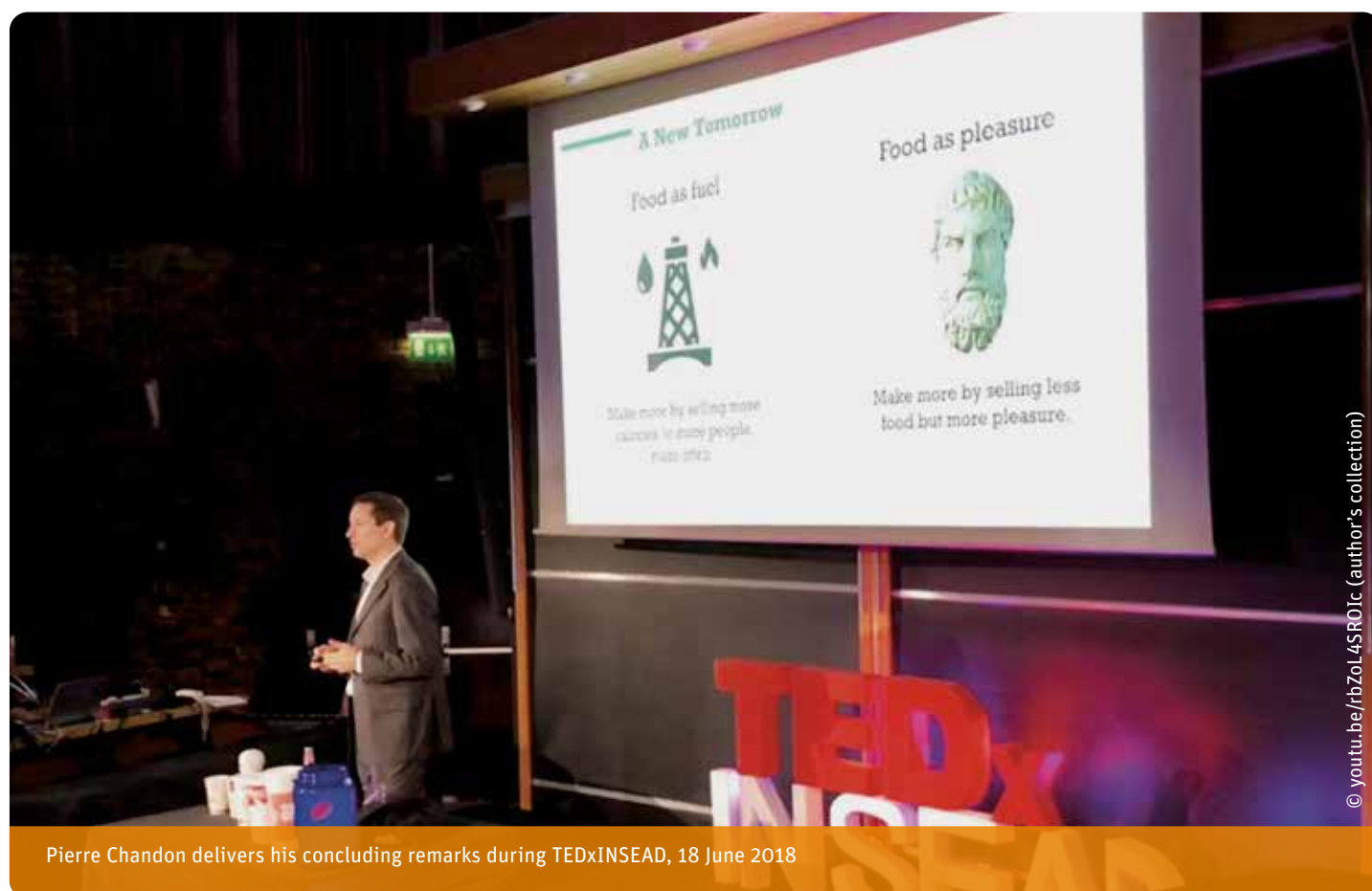
Its effects are particularly acute in low- and middle-income countries, which are now shouldering the double burden of obesity and undernutrition. A comparison of current World Health Organization obesity data with those from the 1990s shows that much of the increase took place in developing countries. In fact, the countries with the highest prevalence of adult and childhood obesity are Pacific Islands such as the Cook Islands and Samoa. Multinational food companies have a particularly strong presence in emerging countries, where people associate Western foods with modernity and status.²

Having won the battle for innovation and growth, food marketing lost the war for public and scientific opinion. Gone are the days when soda manufacturers could claim that they did not make people fat or point the finger at parents who fail to make children exercise.² Almost all of the food marketers I know acknowledge that they can no longer continue to grow the business without taking its societal consequences into account. But what can they do?

Can food marketing not make people overweight?

The classic approach is to reformulate food by removing fat, and now sugar, from their mainstream brands, or by launching a brand extension. Clearly, these are worthy initiatives and have worked well for some brands, such as Halo Top ice cream, which have been able to drastically improve their nutrient profile without impairing the taste. Yet, this tends to be the exception rather than the rule, especially when sugar is critical to texture and taste.

There are two general limitations to food reformulation. First, it can create a misleading health halo, which can lead to overeating.³ For example, one of my studies showed that labeling



Pierre Chandon delivers his concluding remarks during TEDxINSEAD, 18 June 2018

chocolate candies ‘low fat’ led to a 46 percent consumption increase among overweight people compared with when they were labeled ‘regular.’⁴ That single claim – low fat – led people to categorize candies as healthy and to conclude that they could eat more of them, guilt-free and consequence-free.

“There are now four distinct meanings of ‘healthy’”

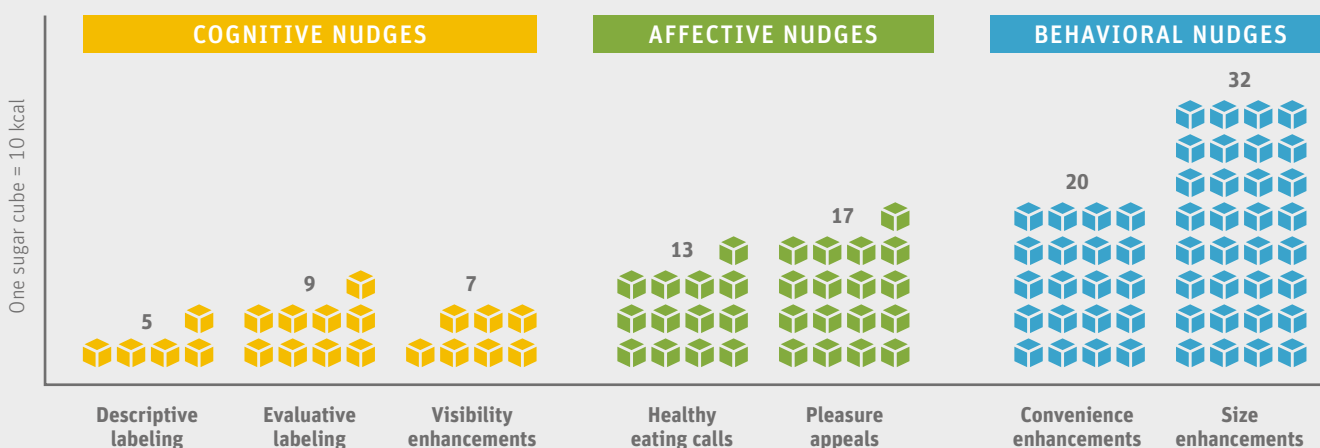
Second, reformulation is being rejected by a growing number of consumers on both hedonic and health grounds. There are now four distinct meanings of ‘healthy.’⁵ The first two are about nutritionally improving the food, by either ‘removing something bad’ or ‘adding something good.’ The other two are about preserving the natural properties of the food by either ‘not removing anything good’ or ‘not adding anything bad.’ Even though the four types of food claims are often uncorrelated with nutritive value, they still influence the inferences and choices made by consumers. For these reasons, food reformulation claims should be mentioned only when they fit the consumption goals of the consumer (e.g., a low-calorie claim for dieters), or only after the reformulation has been implemented and accepted.

Nudging consumers to eat more healthily

Given the shortcomings of industry-led food reformulation, governments and consumer advocates have stopped believing in the ability of industry to regulate itself, let alone change the business model. In the public health domain, it is widely believed that ‘Big Food’ has no ‘constructive role’ to play in resolving the crisis,⁶ and is as bad as – and perhaps even worse than – ‘Big Tobacco’; hence, regulators should follow Chile’s lead and impose tougher warnings, advertising restrictions and taxes.⁷ However, this adversarial approach has run up against clever industry lobbying, as well as consumers who resent the taxes and paternalistic restrictions on their freedom to eat what they want. Another approach is necessary.

“Food marketers should nudge people to eat in a healthier way the food that they already consume”

Instead of making changes to the food itself, food marketers should nudge people to eat in a healthier way the food that they already consume. By nudging we mean influencing behavior without resorting to economic incentives or restricting freedom

FIGURE 1: Seven ways to nudge people to eat more healthily**FIGURE 2:** The effectiveness of healthy eating nudges increases as the focus shifts from information, to affect, to directly influencing behaviors

Convenience enhancements

> **Definition:** Cafeterias and chain restaurants include healthy food by default on their menus, and supermarkets make unhealthy food physically harder to reach on the shelves.

> **Example:** Vegetables are included by default in combo-meals or on fixed menus in cafeterias and chain restaurants, but customers can ask for a replacement.

Size enhancements

> **Definition:** Supermarkets, cafeterias and chain restaurants reduce the size of the packages or portions of unhealthy food that they sell and increase the size of the packages or portions of healthy food that they sell.

> **Example:** Cafeterias and restaurants serve smaller portions of fries and larger portions of vegetables, and supermarkets sell smaller candy bars and larger strawberry trays.

of choice. Reorganizing a menu or a grocery shelf is a nudge; taxing soda or banning energy drinks is not.

In a recent meta-analysis of 96 field experiments,⁸ Romain Cadario and I categorized nudges into seven types, which we grouped in three broad categories, as shown in **Figure 1**.

We measured the effectiveness of each type of nudge and estimated the daily reduction in energy intake that one could expect from the implementation of each nudge.⁹ For the average nudge tested, the expected energy reduction is 124 kcal per day, which is equivalent to 12 fewer sugar cubes per day. But when we separate the results into cognitive, affective and behavioral groups, it is clear that some nudges work better than others (see **Figure 2**).

Cognitive, affective and behavioral nudges

Cognitive nudges provide information and trust the consumer to make a better choice. We estimated that descriptive label-

ing would cut energy intake by only 54 kcal per day. Evaluative labeling, which adds interpretative cues such as a smiley face or traffic light colors, fared significantly better: 91 kcal per day. Visibility enhancements make healthy options more visible by putting them in the center of the shelf or on the first page of the menu. This approach is slightly more effective (70 kcal per day) than simply giving calorie and fat information, but not as effective as when the information was put into context.

Affective nudges rely on emotions and social cues to motivate people to eat better. Healthy eating calls are signs that encourage people to 'make a fresh choice,' or verbal encouragement from staff. Their estimated calorie reduction potential is 129 kcal per day. Hedonic enhancements emphasize the taste experience of food using descriptions such as 'twisted citrus-glazed carrots' or appealing displays. They are estimated to be able to reduce daily calorie intake by 172 kcal.

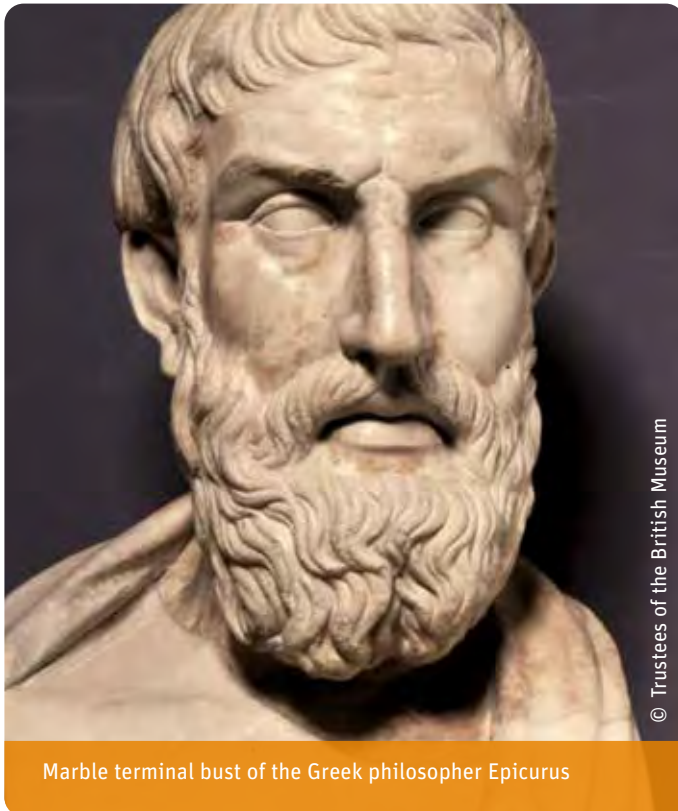
Behavioral nudges are the most effective because they try to change behavior without necessarily changing what people think or what they want. Convenience enhancements make healthier options easier to select or eat, such as putting healthier food options at the front of a cafeteria when consumers have an empty tray to fill up, or providing pre-cut fruit or vegetables. Taken together, they could cut 199 kcal per day. Reducing the size of the plates, glasses or food portion itself is the best way to reduce the amount of unhealthy food consumed and could cut daily calorie consumption by 317 kcal.

Epicurean marketing: shifting from *what we eat* to *how we eat it*

The most effective interventions are not those that people think about.¹⁰ Although the policy debate is around how best to inform people, when it comes to eating, feelings beat information, and behaviors beat feelings. If food marketers want to help us eat better, they should focus on our hands and hearts, rather than our heads.

.....
“If food marketers want to help us eat better, they should focus on our hands and hearts, rather than our heads”

Informed by the meta-analyses results, Epicurean marketing focuses on affective and behavioral interventions. It is termed 'Epicurean food marketing' because it is consistent with the teachings of the ancient Greek Epicurus, who more than 2,300 years ago remarked that the wise person does not choose the largest amount of food, but the most pleasurable. Epicurean



Marble terminal bust of the Greek philosopher Epicurus

© Trustees of the British Museum

nudging makes it possible to guide people towards healthier, more enjoyable – and profitable – eating behaviors, thereby aligning the interests of government, business and consumers.

Epicurean food marketing is based on the realization that overeating is largely driven by the ever-increasing availability of large portions, and most solutions focus on influencing *what* people eat instead of *how and how much* they eat – which is easier.¹¹ It is like a two-pronged fork that helps people enjoy smaller portions of the food that they already like. The first prong is behavioral and focuses on making smaller portion sizes seem normal. The second is affective and appeals to the pleasure dimension (not the health benefits) so that people are happier eating smaller portions.

Reducing sizes: making smaller normal

The size of food portions and packaging has increased enormously. Forty years ago, a 16 oz bottle of soda was advertised as large enough for three adults; now, 16 oz (50 cl) is a normal single serving. The problem is that supersized food portions look a lot smaller than they are. In one of my studies,¹² despite accurately estimating the number of calories in small fast-food meals, people underestimated the number of calories in a 1,000-calorie meal by 25 percent. In another,¹³ people estimated that a large cup contained 296 candies when in reality it contained about twice as many (592).

The underestimation bias is related to portion size, not body size: people of normal weight are as inaccurate as those who are

overweight.¹² Perceived size increases more slowly than actual size – and this is true for children and adults alike, even professional chefs and dieticians.¹⁴

This and other biases in size impression occur because our senses are ‘bad at geometry.’¹⁵ This leads consumers to choose cheap supersize portions that are larger than they think while being reluctant to pay for the extra quantity. The net effect is overeating and food waste – a lose–lose scenario.¹⁶

Why, then, are all companies not downsizing their portions? Because people are better at noticing decreases than increases in size. This happens because two reference points are available when estimating the decreasing quantities: the original size and zero, given that quantities can never be negative.¹³ For increasing quantities, however, only the reference size is known, as the portion could increase to infinity (and it sometimes feels like it does).

.....
“An effective strategy to encourage people to choose smaller portions is to add a smaller size to the range available”

An effective strategy to encourage people to choose smaller portions is to add a smaller size to the range available.¹⁷ Because size perception is relative, adding a smaller size transforms the old ‘small’ into a ‘medium’ – making consumers more likely to buy it rather than the ‘large’ size. Another approach is to communicate volume – e.g., Starbucks branding its smallest size the ‘tall’ cup. Finally, rather than making packaging and portions smaller, increasing the height while reducing the base masks the size reduction and facilitates downsizing. For example, in one study we were able to downsize a product by 24 percent without people noticing, even when they were able to weigh the product in their hand.¹⁶ The height appeared to compensate for the decrease in length and width, which our senses fail to multiply.

More pleasure: putting the sensory experience of eating at the center of food decisions

The second idea of Epicurean marketing is to help people enjoy – and be willing to pay more for – smaller portions. Most people choose large portions because they provide value for money and will not leave them hungry, but do not consider how they will actually feel when eating them. People tend to forget that sensory pleasure peaks during the first few bites and diminishes with each subsequent bite. More importantly, it is the last bite that determines the overall enjoyment of the food. Because pleasure in food is influenced by the average (not the sum) of the pleasure

experienced in each bite, the last bite of a large portion yields less eating enjoyment. Hence, people tend to consume portions that are too large from a pleasure standpoint.¹⁸

“Because they forget that sensory pleasure doesn’t increase with quantity but with quality, people tend to choose portions that are often too big from a pure pleasure standpoint”

In a series of studies, we found various ways to put eating enjoyment at the center of portion-size decisions. One way, which we call ‘sensory imagery,’ was to ask people to visualize the sensory experience of eating hedonic food, evoking its taste, texture and aroma. Across many experiments, this simple technique led schoolchildren, French and American adults, and restaurant customers to choose more reasonable portions of desserts. For example, after sensory imagery, hungry 7–11-year-old children chose to eat 7.1 percent less brownie for an afternoon snack.¹⁹ Sensory imagery works particularly well among normal (non-restrained) eaters and when they are hungry. In another study, it reduced the size of the dessert chosen by 367 non-restrained adult women by 24 percent.²⁰ Even better, sensory imagery led them to choose the (relatively smaller) portions that were optimal size for eating enjoyment.²⁰ In other words, sensory imagery made people happier with less food.

Another way, which we call ‘Epicurean menu labeling,’ consists of adding words such as ‘aromatic,’ ‘bold,’ ‘golden,’ ‘velvety’ – which emphasize the multisensory, aesthetic properties of food. In a field experiment in a French cafeteria,²¹ Epicurean menu labeling reduced food intake by 17 percent yet increased the perceived value of the meal by 16 percent because it increased savoring (rather than simply eating) the food. In contrast, adding nutrition information on the menu made people choose smaller desserts but feel bad about it, reducing their evaluation of the fair value of the experience. Consistent with our distinction between visceral and Epicurean eating pleasure,¹⁸ an analysis of the price and menu descriptions in 6,511 US restaurants showed that items with Epicurean descriptors (but not ‘visceral’ descriptors associated with eating impulses) had a higher price. The word cloud shown in **Figure 3** shows the relative frequency of sensory descriptors used in these restaurants, which are categorized as Epicurean (in blue), visceral (in red) or those that could not be categorized (in gray). Food marketers have a rich lexicon of Epicurean descriptors at their disposal.

FIGURE 3: Epicurean and visceral sensory descriptors used in US restaurant menus. The sensory descriptors are listed in alphabetical order and a difference of two font sizes indicates that the word is 100 times more frequent (an asterisk indicates that hyphenated variations were included). The identification of the 162 sensory descriptors and the menu data are from Jurafsky, Chahuneau, Smith, and colleagues.^{22,23}



“Food marketers and the food industry should stop acting as if they are in the energy business”

From food as fuel to food as pleasure

Food marketers and the food industry need to shift to a new model. They should stop acting as if they are in the energy business (making profits by selling more calories to more people, more often) and move to an Epicurean business model whereby food is a source not of fuel but pleasure. Instead of making more by selling more, they will profit by selling smaller portions but more pleasure – a triple win for health, pleasure and business, and a strong refutation of the accusation that food marketing has no role to play in the fight against overeating.

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Social Marketing to Promote Egg Consumption in Indonesia

Formative research findings

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- > The campaign will be implemented as a 3-month pilot in three villages in the Palu and Sigi districts of Central Sulawesi province. A baseline and end-line evaluation will be used to measure the effects of the campaign on attitudinal changes and egg consumption.

Key messages

- > A joint research study was conducted by Wahana Visi Indonesia (WVI) and *Sight and Life* (SAL) to better understand the drivers of egg consumption in Central Sulawesi, Indonesia.
- > The research used social marketing principles focused on gaining insights into what moves and motivates the audience and which emotional drivers influence egg consumption and related food choices.
- > Three key actionable insights emerged from the research: (1) being a good mother and wife is what matters most to female research participants, and influences their food choices, including the incorporation of eggs into daily meals; (2) eggs are not the 'top-of-mind' animal-source protein and are less valued by research participants than chicken and fish; and (3) consuming eggs daily is perceived as boring, and for eggs to be eaten daily, they need to be presented in versatile ways.
- > WVI together with SAL co-designed a social marketing intervention mix that will be translated into a social marketing campaign with multiple activities by a creative agency.

Setting the scene

Given the potential of eggs to improve nutrition in the country, Royal DSM (a multinational company active in human and animal nutrition), *Sight and Life* (SAL) and World Vision, with the local partners being DSM Nutritional Products Indonesia and WVI (a partner of World Vision), joined forces to increase the availability, accessibility and consumption of eggs in Indonesia at the household level. This joint initiative is addressing bottlenecks in the supply chain and boosting consumer demand for eggs. A 2-year pilot is being implemented to improve egg consumption by pregnant women, lactating mothers and children under 5 in Central Sulawesi.

Indonesia is one of the most rapidly growing economies in the world; it has a healthy 5 percent GDP growth rate and a population of 261 million. Despite economic progress, however, malnutrition is a grave concern – 87 million Indonesians suffer from food insecurity, 15 million women are anemic and one child in three is stunted.¹

A wide body of evidence suggests eggs are one of the highest nutritionally dense foods, and recent breakthrough research studies have shown that consuming an egg a day has the potential to significantly improve growth and reduce stunting.²

“Consuming an egg a day has the potential to significantly improve growth and reduce stunting”

BOX 1: Main research domains

-
- > Current eating habits, taste preferences, particularly in relation to eggs
-
- > Perceived benefits of egg consumption
-
- > Barriers to egg consumption (including the exploration of social norms around the same)
-
- > How eggs can be added easily into existing cooking/meals
-
- > Attitudes and perceptions regarding eggs
-
- > Ambitions and hopes for the future (for themselves and their children)
-
- > Lifestyle, household roles and dynamics, daily routine
-
- > Key influencers and trusted sources
-
- > Communication channels
-
- > Health services (making use of health services; the perception of health services)

To ensure that a demand generation strategy for eggs is based on strong evidence about the target audience in Central Sulawesi province, formative research was conducted to gain insight into the lives of pregnant and lactating women and caregivers of children under five years of age. SAL provided technical guidance and support to WVI in designing, planning and carrying out the research. SAL also led data analysis. Together, WVI

and SAL co-designed a social marketing intervention mix that will be further developed and implemented with the help of a local creative agency in the coming months.

Methods

We employed a qualitative research approach, using in-depth interviews with key informants that were designed to provide a thorough understanding of the target audience. Specifically, the research examined the following key domains (see **Box 1**).

Purposive convenience sampling was used for qualitative data collection in order to interview a broader spectrum of informants. Participants were recruited through a collaboration with community health volunteers (see **Table 1**). A total of 51 participants were recruited for this study. The research areas included three villages in the districts of Palu and Sigi, namely Sunju, Duyu and Pengawu. These villages were selected because of their high rates of malnutrition, along with other project criteria.

For the purpose of qualitative data collection, eight enumerators were trained by SAL in qualitative data collection skills.

Data was transcribed, translated and analyzed in tranches, using NVivo software until data saturation was reached.

Research findings

In the following section, we summarize the key findings that emerged from the analysis.

A look at the participants' lives in the round

Most female participants interviewed are housewives with occasional labor opportunities. Many dropped out of school once they got married. They spend most of their time at home, taking care of their children and husband, cleaning and cooking. Being a mother and wife takes a priority role in their lives, which often translates into prioritizing their children's and husband's needs and wants over their own, and also in relation to food choices (see **Box 2**).

TABLE 1: Sampling framework

Research participants	Sigi	Palu	
	Sunju	Duyu	Pengawu
Pregnant women	3	1	1
Mothers of children aged 6 months to 5 years	5	7	6
Spouses of pregnant women and mothers with children under 5	3	0	3
Elderly family members living with pregnant women and mothers with children under 5	4	2	2
Frontline health volunteers operating through Posyandus (Community Health Centers)	2	1	1
Health staff at Puskesmas (Health Clinics)	4	3	3
Total number of research participants in Palu and Sigi	21	14	16

BOX 2: A mother feeding her child with patience and care in Palu



© Agung Pranoto

Portrait of our primary consumer

- > Rural Indonesia, educated to high school
- > Mundane, monotonous daily routine – cooking, cleaning, looking after family
- > Lack of me-time, no community events to go to
- > Values community for being helpful, but is also very cautious of gossip
- > Had dreamed of becoming a working woman when she was younger; now dreams that her child will be successful and stay healthy
- > Fears being judged by others as not being a good mother or a good wife
- > Faces pressure at multiple levels – cultural, social, familial
- > Obeys her husband and plays an essential role in satisfying his needs and wishes
- > Confides only in her husband, her parents, siblings, other elderly relatives and the midwife (for health advice only)
- > Prioritizes her child's and husband's demands, then foods that are filling, then convenience of preparation
- > Sees less value in eggs than in red meat, fish and chicken
- > Biggest reasons for not using eggs in cooking are fear of allergies and the view that eggs are boring and consequently less attractive than other tempting options
- > Biggest motivators for using eggs are their affordability, access and versatility

“Every day I like to be at home. At home taking care of the children, I can nurse her every day and not use formula, that is what I like. There isn't any other activity other than that, at home taking care of the baby. Like that, that's all.”
(Mother of two, age 22)

Many women reported that they prefer spending their free time at home, in their comfort zone. This was often because they were expected to fulfill their housewifely duties, obey their husbands and prioritize their role as a mother and wife over other things such as going out. Another main reason for choosing to be at home was a strongly expressed fear of being the subject of gossip when socializing with other women, outside of their homes. The fear of judgment was expressed throughout the interviews and in relation to making food choices. It often meant that women would fear being judged for making the wrong choices, such as giving their children eggs – something that was in many instances believed to cause visible boils on their children's faces.

“I don't want to talk about people. We don't talk about people, I don't want to talk about people either. My husband told me, if you want to go to the neighbor's

house, you aren't allowed to talk about people. You have to watch yourself. If I want to go anywhere, I need to ask for my husband's permission. I am like that every day, that is why earlier I first asked for my husband's permission to go to the Integrated Health Post. ‘I want to go to the Integrated Health Post.’ ‘Oh ya,’ my husband said. Like that every day.” (Mother of two, age 33)

“But as for the mother ... the mother works in the pharmacy ... the mother says it isn't because of ... she says it is because of snacks that he gets boils. His mother gives him eggs, but after he eats them, he gets a boil right away ... so I don't know which one is right.”
(Mother of two, age 30)

The father's role was described by both female and male participants as being the breadwinner. From the male participants' perspective, being productive and providing for their families was their main role and ambition. From the female participants' perspective, the father did not have a major role to play in taking care of the child, other than making a financial contribution to the household and approving decisions. Male

BOX 3: Key influencers

The father/husband – for validating all decisions at home



A father at work at a layer farm at Posyandu Dahlia in Duyu village; he was so happy to collect all the eggs

- > Hardworking, breadwinner
- > Is obeyed and listened to
- > His needs and wishes are prioritized before those of others
- > Dictates what is to be cooked
- > Has the say in how money is spent

The community – for creating social norms and validating decisions



Mothers in Duyu village wait to have their children weighed, while community health volunteers record the children's weight after weighing

- > Mother easily feels judged and fears gossip
- > The community's judgment (both positive and negative) is important to the mother
- > Mother seeks validation from the community
- > Mother compares herself with others
- > The community sets standards and social norms

The health professional – for validating health and nutrition information



A community health volunteer weighs a child under 5 at Posyandu Krisan in Duyu village

- > Disseminates health and nutrition information in the community
- > Is the main and the most credible source of health information, along with the internet
- > Recommends foods to eat during pregnancy and the first 1,000 days of life

participants reported enjoying the freedom of spending time with their friends outside working hours, but also minding the children in order to support their wives.

"It is like this, because I, I don't think like, we all think differently. Usually there are other people that like to be at home, don't like to work. For me, I think, because I now have this child, I have already thought for a long time I have been a worker. I work doing anything, whatever (...)"
(Father of two, age 23)

When asked about hopes and dreams, most male and female participants expressed a sense of failed personal dreams such as getting a good education and a reputable job. They hoped to be able to fulfill this ambition in respect of their children by working hard and saving up.

"I really wanted to go to school, work and help my parents. But, well, I could not do anything, my parents weren't able to. We were also poor before, when I met my mate I really wanted my child go to school, yeah, thanks to God,

it was granted, now she works." (Mother of three, age 41)

"Yes, I hope that they become somebody, not like their parents. Not like their parents, like this. (...) Maybe like a midwife, doctor, this one wants to be a soldier. The plan is to open a small business: my husband just told me that he would like to open a small kiosk. We are waiting for the money to do so, saving up to open a kiosk so that the money from the kiosk can be saved up in the bank. (...) For our children's future. One day later on, when they need money for a higher education, they can be sold."
(Mother of two, age 27)

The key influencers of mothers' decision-making overall include husbands and parents. Midwives and health professionals are trusted for health advice (see **Box 3**). Because of the fear of gossip, the circle of trust is usually restricted to close family.

"Emm, the midwife. They know all about the nutrients in food, but for us as just regular people – I mean, we don't know about nutrition, which nutrients are

*more suitable. That is from the health department (they are the ones that know about this).” (Smiles)
(Pregnant woman, age 24)*

*“For personal problems, I just go to my own family. For example, if I have a personal problem, ya, I just talk to the people in my home. If there is a problem within the family, most often my brother or my oldest relative, like my mother’s sister, as for others – no. We are more like that because problems are like a disgrace too, and disgraces can’t be out in the open but have to be covered.”
(Pregnant woman, age 23)*

The findings from the mothers’ and father’s interviews correlate with the findings from the healthcare professionals in that the internet is a key source of health and other information. Many of the health professionals interviewed said they had WhatsApp groups for pregnant women, and some said they preferred them to Facebook because they feared exposing themselves and the women to the judgments of others, i.e., gossip.

*“Often (laughs). That is why the nurse should have Facebook and with those that have children under 5, it would be good to make a group. So you could see it in the comments, maybe about being told to gather together.”
(Mother of two, age 26)*

*“Maybe too, now because they know about Facebook, Google, so they can search on their own. They can learn on their own if they want to search, they can also ask on WhatsApp because we have groups for pregnant women and children under 5 on WhatsApp. Now there are many mothers that use an Android phone, so they use WhatsApp more. So if there is something they don’t understand, or if they don’t know when the Integrated Health Post will be held, they ask on WhatsApp.”
(Midwife, age 32)*

Family eating habits

Most female participants said they were responsible for buying and cooking the food. Food choices often depend on market availability and the preferences of children and husbands, which are prioritized over nutritional content. A usual meal consists of vegetables, rice, sometimes beans and a side dish. The most preferred side dishes are chicken and fish, followed by eggs, tofu and tempeh. Most female participants said they would feed their children family food as soon as their children had teeth. The only consideration some mothers made was the spiciness level of the food they served to the children.

*“Well, if the fortune is here, we could eat delicious food. But, if not, we just eat simple food. Tofu and tempe. If we have good fortune, yeah, there will be some grilled fish and chicken. If we barely have money, we’ll eat tofu and tempeh. Sometimes just plain noodles.”
(Mother of one, age 27)*

Perceived benefits of egg consumption

Overall, most male and female participants said that eggs were easily accessible and available, more affordable than other animal-source foods and frequently consumed. When they were probed as to the exact number of eggs eaten in a week, the responses varied. Of those people who ate eggs, most said they consumed them 3–4 times a week on average.

“Eh, usually I eat eggs three times a week. Sometimes I do [eat eggs] only if I make fried rice, hehe (laughs), that’s all.” (Pregnant woman, age 24)

Many female participants said they liked cooking eggs because eggs could be prepared in different ways. However, those ways were usually limited to fried, boiled or sometimes scrambled eggs.

“Before, she used to eat them often. I would fry them. If we needed something fast, I would just cook her an egg and she would eat it. But she didn’t eat too much of the egg, just a lot of rice.” (Mother of two, age 27)

Some perceived eggs as an easy food that could be prepared quickly, when time is short. A key perceived benefit of eggs from the mothers’ perspective was that their children liked them.

“I don’t know about the benefits, because that is indeed what they like.” (Mother of four, age unknown)

Some mothers valued eggs because they were perceived to help with their children’s weight gain and were good for their growth and development.

*“The benefits for him, he would gain weight too, grow – grow more naughty, this Faruq here.” (Laughs)
(Lactating mother, age 35)*

Perceived barriers to egg consumption

When discussing eating habits, most participants expressed that if they can afford it, they prefer to choose chicken or fish over eggs. Throughout the interviews, an unofficial food hierarchy emerged, showing that people place a lower value on eggs than on other animal-source foods, with eggs being placed at almost the same level as plant-based protein such as tofu and tempeh.

TABLE 2: Actionable insights

Actionable insight	Supporting quotes	Relevance for social marketing intervention
1. Being a good mother and wife <ul style="list-style-type: none"> > Need to be perceived by others as good wife and mother – to prevent gossip > Making child and husband happy – immediate happiness, fullness > Fulfilling child's dreams – saving up, but no link to nutrition 	<p><i>"In my opinion, a good mother is a mother who can meet the needs of the whole family. That is, anything that is asked for by a child can be fulfilled, but a reasonable request. (...) In the community, she interacts/engages like other people."</i> (Mother of four, age unknown)</p> <p><i>"The husband's words should be done. It can't be resisted. Households are prioritized over neighbors or friends. The family takes precedence. You can go out after finishing the housekeeping and cleaning the home. It's impossible to get out if you don't ask permission."</i> (Mother of one, age 25)</p>	<ul style="list-style-type: none"> > Social marketing intervention must create demand for eggs in fathers and children > Social marketing intervention must empower women and equip them with the confidence and skills to prepare delicious meals with eggs for the whole family, making them feel like good mothers in the eyes of their community > Social marketing intervention must link eggs to achieving dreams: eggs = brain food > Social marketing intervention must debunk the allergy myth and make the caregivers and health professionals believe that eggs are not the primary source of allergies and that a woman is a good mother if she feeds her children eggs
2. Food hierarchy <ul style="list-style-type: none"> > Low perceived value of eggs > Eggs not aspirational, often associated with low financial means 	<p><i>"I have [suggested eating eggs], here we see if they have higher education too, we look at their economic condition too. If we tell them to give foods that are high in protein like meat, they can't, so mainly they will fulfill their nutrition, protein, from eggs like that."</i> (Midwife, age 28)</p> <p><i>"There usually aren't any side dishes [proteins], except if there isn't fish, then tofu, if there isn't tofu, then eggs."</i> (Mother of four, age 35)</p>	<ul style="list-style-type: none"> > Social marketing intervention must increase the value of eggs by making eggs fun to eat, easy to prepare and popular > Egg consumption must be endorsed by influential media figures, health professionals, community leaders and family members – linking eggs to their key perceived benefits > Intervention must 'nudge' or remind people to choose eggs at critical decision touchpoints: kiosks, street vendors, health centers, Posyandus, social media, goodie bags
3. Food versatility <ul style="list-style-type: none"> > People already eat eggs, mainly as a side dish: they are available, affordable and accessible > However, the idea of eating eggs every day is perceived as boring and unimaginative > Mothers want to vary the foods they prepare so as to please their child 	<p><i>"I don't know, maybe it is recommended to eat that, but you have to vary it too. You can't just eat them all the time."</i> (Pregnant woman, age 24)</p> <p><i>"I don't know if it is good every day to consume [eggs], good or not, but likely not either, if all the time. [She eats eggs all the time.]"</i> (Pregnant woman, age 30)</p>	<ul style="list-style-type: none"> > Social marketing intervention must show that eggs can be versatile > Social marketing intervention must show that eating eggs every day can be delicious, taste-forming, fun for everyone > Social marketing intervention must show that mothers can easily incorporate eggs into their child's daily meal in a variety of ways

"There usually aren't any side dishes [proteins], except if there isn't fish, then tofu, if there isn't tofu, then eggs."
(Mother of four, age 35)

This value perception was echoed by most health professionals. They believe that chicken and fish are more nutritious than eggs and tend to recommend eggs as a source of protein when they feel that people cannot afford other animal-source foods, but rarely as their first choice.

"Fish. A primary source of protein, first fish, I mean it is the easiest to get, fish is the first one. (...) Fish is better than eggs ... fish possibly." (Nutritionist, age 25)

"I have [suggested eating eggs], here we see if they have higher education too, we look at their economic condition too. If we tell them to give foods that are high in protein like meat, they can't, so mainly they will fulfill their nutrition, protein, from eggs like that." (Midwife, age 28)

BOX 4: From the audience perspective

Current feelings – Mother



- > Stressed about being a good mother and good wife
- > Fears being judged by others for failing as a mother/wife
- > Gives in to her child's demands without thinking of the future
- > Does not see much value in eggs because they are perceived as:
 - > inferior to other foods such as fish and chicken
 - > not versatile
- > Feels that the health center is boring



Aspired feelings – Mother

- > Should feel that she is a good mother if she feeds her child eggs
- > Should believe that eggs can contribute to the success of her child
- > Should feel that eggs are as valuable as fish and other animal-source foods
 - > Cooking eggs is fun
 - > Her husband and child(ren) like eggs
 - > Eggs are versatile and not boring
 - > Eggs are popular
- > Should feel that health center visits are something to look forward to

Current feelings – Health professional



- > Feels she is already doing a great service to the community
- > Feels she is giving the right advice when it comes to eggs, that is:
 - > eggs cause allergies
 - > NB the few health professionals who do not believe that eggs cause allergies make no effort to prove their point
- > Feels that no-one listens to her
- > Does not empathize with the mother
- > Does not think that mothers can help her to do her job better



Aspired feelings – Health professional

- > Feels trusted by mothers
 - > Needs to be seen as a TRUSTED source of advice by the mothers who come to her
- > Feels that giving eggs and advising mothers to give eggs can help her achieve her own targets (e.g., targets for reducing stunting)
- > Feels that she can make visits to the health center a fun experience for mothers, by making interactions meaningful, playful, joyful and interesting

Current feelings – Father



- > Does not have eggs at top of mind when he thinks of food
- > Considers eggs less valuable and less nutritious than other foods
- > Does not link eggs to health and strength, either for the baby or for himself
- > Wants to be a good father
- > Wants his child to have a good education and succeed in life



Aspired feelings – Father

- > Feels that eggs are valuable, like other foods
- > Feels that eggs lead to increased productivity – better strength, immunity, etc.
- > Feels that he is a good father when he spends money on eggs
- > Feels that eggs are a good investment

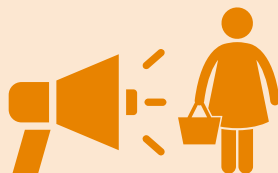
BOX 5: Translating consumer insights into a social marketing intervention mix

Support consumers and influencers



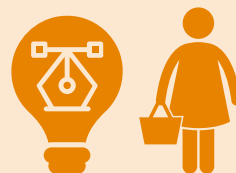
- > **Activities for health professionals**
- > National Nutrition Day workshop
- > Egg info merchandise
- > Government/Pediatric Association memo/press release
- > Motivational interviewing training
- > **Yummy Mummy Group**
- > Cooking classes
- > Arts and crafts activities
- > Facilitated chat sessions
- > **Activities for kids**
- > Lunches
- > Fun games
- > Child Chef

Inform consumers and influencers



- > **Using local/social media influencers to promote eggs**
- > Vice mayor/band leader of Palu
- > Cooking class with social media influencer
- > Local Mum role models
- > Fun, easy and versatile egg recipes
- > **Egg fair/bazaar – egg cooking competition, workshop using Dr Oz style, egg games, local music, mascot**
- > **Religious events**
- > **Egg mascot – every family's favorite and fun helping hand – featured in all media and communications**
- > **Series of adverts – using positive psychology, Good Mum image (positive gossip)**
- > **Jingle – Dangdut music**
- > **Integration with soccer matches**
- > Flash mob
- > Murals
- > Cheerleaders
- > **Point-of-sale advertising**
- > Street vendors
- > Mobile sellers
- > Specific farmer-sellers

Design for consumers



- > **Calendar with recipes, pictures, fun messages**
- > **Tupperware shaped like an egg**
- > **Egg-themed goodie bag**
- > **Comic strip/book for kids**

It was a commonly expressed belief among almost all participants that eggs can cause allergies in children, appearing in the form of “itchy red spots” or “white spots.” This belief was also expressed by lactating mothers, who believed that eating eggs while breastfeeding would cause allergies in their children. Many participants said they had experienced an egg allergy in their own children and also in those of friends and neighbors. Some participants said that eating eggs “once in a while” would not necessarily cause issues but that eating “too many” eggs could trigger an allergy. How many is “too many” was not specified.

“Eating too many eggs, in my opinion doesn’t ... isn’t beneficial if it is too many, because it is feared that, feared that what is it called, allergies. So it is feared to eat too many. Eh, actually, eh, actually, it would be beneficial but if there are too many, a large quantity, I am scared that it would cause an allergy [allergic reaction] later on.”
(Mother of one, age 23)

This belief was echoed by most health professionals, who would recommend discontinuing the consumption of eggs for a while

when children experienced symptoms of allergies, even if the cause of the symptoms was unclear.

“Indeed there are those that have allergies to eggs, but, eh, the protein in an egg is really high. So the allergy is formed by the food that we eat, high protein, sometimes that protein doesn’t correspond with the genes in the body. Nah, usually because the protein is high in eggs, nah, many can’t eat eggs. So indeed, if they are allergic to eggs, we can suggest other things too.”
(Doctor, age 24)

Most participants said that eating eggs every day could get boring and that it was important to vary the foods one consumed.

“I don’t know, maybe it is recommended to eat that, but you have to vary it too. You can’t just eat them all the time.” (Pregnant woman, age 24)

(Smiles) “It would get boring every day, eating eggs like that.” (Mother of three, age 38)

Key actionable insights

Research, particularly in-depth qualitative research, can provide a wealth of interesting findings. However, in social marketing, practitioners need to focus on the findings that help them understand why people demonstrate a particular behavior, and the key insights that could be used to trigger change. This information is often referred to as ‘actionable insights’ – key information that one can act upon.³

“In social marketing, practitioners need to focus on the key insights that could be used to trigger change”

Three insights were identified as having potential to translate into actionable recommendations for a social marketing intervention mix (see **Table 2**).

SAL supported WVI in a brainstorming session to translate actionable insights into a fun, easy and popular social marketing intervention mix (see **Box 4**). Three main audiences for the social marketing intervention were identified: the mother, the father and the healthcare professional. The team explored different intervention options by first asking themselves: “How does our audience currently feel with regard to egg consumption and the things that really matter to them?”

and “How do we want them to feel?” in order to achieve behavior change.

The co-design session resulted in a range of ideas for social marketing activities (see **Box 5**) that would: **(1)** inform and communicate about eggs in a meaningful way; **(2)** teach, inspire and build the skills of mothers and health professionals in preparing eggs in a tasty and versatile way and recommend them as valuable; and **(3)** design products and services to facilitate behavior change.

Next steps

In the coming weeks, the WVI team, with support from SAL, will work on implementing the social marketing intervention mix, with the expert help of a local creative agency. The intervention will be implemented during 3 months as a pilot in three villages in the Palu and Sigi districts of Central Sulawesi province. A ‘before and after’ evaluation will be conducted to measure the effects of the social marketing intervention on egg consumption, as well as related attitudinal changes.

Acknowledgements

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Why Invest in Consumer Insights?

A foundation's perspective

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Key messages

- > There is an urgent need to reinvigorate food systems and improve the quality of the diets consumed by children, adolescents and pregnant and lactating women worldwide.
- > Introducing climate-friendly, sustainable, nutritious products into the marketplace will play a key role in improving diets; however, consumers need to be motivated to demand and consume such products.
- > In the field of nutrition, we have often relied on traditional top-down approaches, such as health promotion and information education and communication, to shift diets and change health behaviors.
- > Generating a deep understanding of the target consumer and using social marketing principles to generate demand can be an effective way to reach consumers, particularly those who are at the 'base of the pyramid.'

Introduction

Feeding the world is one of the greatest challenges that we face. Over 821 million people, or one in nine people worldwide, endure hunger every day – a figure that has been on the rise for the past 3 years.¹ Beyond suffering hunger, an additional 1.3 billion people do not have regular access to safe, nutritious

and sufficient food.¹ Poor-quality diets contribute to all forms of malnutrition: stunting, wasting, micronutrient deficiencies, women's underweight, and obesity among all age groups and in every country worldwide.² Pregnant women, new mothers and children in low- and middle-income countries bear the brunt of the disease burden associated with malnutrition. The estimated cost of the 'triple burden' of malnutrition to the global economy could be as high as US\$3.5 trillion per year, or 11 percent of global GDP.³

“The estimated cost of the ‘triple burden’ of malnutrition could be as high as 11 percent of global GDP”

Food systems play a vital role in delivering safe, affordable and sustainable high-quality diets. However, in many of today's food systems, nutritious foods are not available or affordable for many people, particularly lower income consumers. A common feature of our food systems is the increasing prevalence of highly processed foods that are cheap and of low nutritional value.⁴ Recent data has shown that up to three-quarters of Asian children and half of African children are now consuming unhealthy foods and sugary drinks in the second year of life.⁵ This is against a backdrop of increasing environmental degradation, biodiversity loss and climate change. Business as usual is not working, and the recently published EAT–Lancet Commission has called for a food system transformation to improve not just diets, but the environmental aspects of the food system as well.⁶

Considering these complex challenges, there is an urgent need to make food systems work better. This includes increasing the availability of affordable, nutritious foods and introducing

new and sustainable products into the marketplace. However, as with any product, target consumers need to be motivated and inspired to purchase and consume them. The food industry has been hugely successful at intensely marketing unhealthy, highly processed foods to stimulate consumer demand.⁶ These same techniques and tactics can be used to promote and influence consumers to choose healthy and nutritious products.

Placing the consumer at the center

Generating consumer demand in the public health sector has historically taken a top-down approach. In nutrition, we have often relied on health promotion and information education communication, which primarily uses information and education campaigns to shift diets and change health behaviors. These approaches have evolved into more audience-focused behavior change communications, but they still rely on communications as the main lever for change. Alternatively, social marketing refers to the application of commercial marketing principles to influence target audience behaviors, and is a much broader and more comprehensive approach that can be applied in both public health and market-based models.⁷ The key difference between traditional approaches and social marketing is that the goal of social marketing is to change behaviors, rather than just raising knowledge and awareness. It actively engages with the consumer, places them in the middle, and listens to their needs and desires first.

“The goal of social marketing is to change behaviors”

Social marketing employs a systematic approach that consists of the ‘4Ps’ of product, price, place and promotion.⁸ It is about delivering the right product, at the right place, at the right price, at the right time, to the right people. All of these factors must be acceptable to a consumer before they purchase a product or adopt a new health practice. As consumers are bombarded with marketing messages every day, most of the information they receive is likely to be screened out or forgotten; therefore, new products need to deliver added consumer value. Numerous studies on new product performance have shown that understanding the needs of the target consumer first creates a huge strategic advantage and improves the chances of successful product uptake – which, in turn, improves health and nutrition outcomes. At the Children’s Investment Fund Foundation (CIFF), we take this consumer-centric approach when investing in products and services across our child health and adolescent sexual and reproductive health portfolios. An important first step is investing in consumer insights to inform marketing strategies.

Case study: Multiple micronutrient supplements in Bangladesh

At CIFF, one of our key strategic priority areas is ensuring babies are born at a healthy weight. Part of this involves making sure that mothers have optimal nutrition and can access and choose the products they want for themselves and their babies. The World Health Organization currently recommends that pregnant women should take iron and folic acid supplements, which is the current standard of care. However, we now have compelling evidence that taking a different product – multiple micronutrient supplements (MMS), which are a combination of 15 vitamins and minerals – instead of iron and folic acid can significantly reduce the number of babies born at low birth weight, reduce the risk of maternal anemia and improve child survival rates.

In response, CIFF, working together with our partners, has developed an investment to set up a sustainable business model for MMS for pregnant women through pharmacy networks in Bangladesh. Using the ‘4Ps’ approach as a framework, the aim of this investment is to make MMS affordable, available and desirable to every pregnant woman in the country by 2024. A key component of this investment is to conduct intensive consumer research to understand what barriers might exist to MMS uptake in order to design effective marketing strategies and ensure pregnant women are motivated to buy and consume the product.

“A key component of this investment is to conduct intensive consumer research to understand what barriers might exist to MMS uptake”

We plan to structure demand creation activities into two key areas based on an initial scoping assessment:

1) B2C demand creation for consumers and their key influencers

Evaluation data from a micronutrient powder (MNP) program for young children in Bangladesh revealed that strategies used to generate demand were best described as ‘push strategies’ (i.e., knowledge dissemination and awareness-raising activities) but that no ‘pull strategies’ (e.g., creating an enabling environment and motivating consumers through tailored offers and services) were being used to effectively create demand.

The evaluation of the MNP program showed that while product awareness had increased among caregivers, a major barrier to uptake was the perceived ‘lack of need’ for the product from a customer perspective, which indicates a marketing problem. The unique contribution of social marketing to the field of be-

FIGURE 1: Launching a product – comparing our approaches for multiple micronutrient supplements (MMS) and micronutrient powders (MNP) in Bangladesh



FIGURE 2: Focus group discussions and kitchen observations in Bangladesh



Pregnant and lactating women and young mothers in rural Bangladesh

1



Micronutrient powders added to home-cooked complementary foods

2

havior change is its potential to address behavioral challenges that share the characteristics of a marketing problem – where the desired behavior is somewhat complex or new, people need new skills, the behavior is not widely accepted, significant barriers to adoption exist and the perceived short-term benefits are few.⁸ The insights from the MNP program evaluation highlight the huge importance of using consumer-centered design to create communication content and services that motivate people to change behaviors and also increase the value of a product in their perception. In addition, as MMS are a new product on the market, they have few immediately visible benefits. MMS are also a preventative supplement, rather than a disease treatment like oral rehydration salts. The benefits are therefore manifested over time and not noticed immediately. Initial insights therefore suggest that our approach should aim to create a social norm and generate a ‘buzz’ around the product.

2) B2B demand creation for MMS with healthcare providers

Healthcare providers are a key trusted resource for health advice among pregnant women, and women tend to trust their recommendations. The scoping assessment with Bangladeshi health professionals and paramedics found that there is a lack of perceived standards for supplementation and a tendency to recommend prenatal supplementation, including iron and folic acid, primarily as a form of treatment for pregnancy-related symptoms on a needs basis rather than as a routine prophylactic. As pregnant women are very likely to come into contact with a healthcare provider throughout their pregnancy, the healthcare provider's influence can have a positive or negative impact on a woman's decision to purchase MMS, and whether she continues to take them and complies with recommendations. Identifying and addressing key barriers and motivators for healthcare providers to change their ‘business as usual’ mindset is therefore instrumental for the successful uptake of MMS. When launching a new preventative care product or a treatment product, the commercial sector always makes sure that the right health professionals are on board, and for a good reason, as they are key gatekeepers to increasing demand for the product (see **Figures 1 and 2**).

Case study: Egg powder in Ethiopia

Working together with our partners, CIFF is conducting a consumer insights study on egg powder in Ethiopia. Eggs are loaded with high-quality proteins, vitamins and minerals, and have great potential for improving maternal and child nutrition in low- and middle-income countries. Egg powder, which is composed of dehydrated eggs, can be much cheaper than fresh eggs for the consumer because of economies of scale; hence, it has become an affordable commodity and is widely used for its functional properties in the food industry. Additionally, egg powder is much easier to transport, store and handle, has a long shelf

life of 2 years, and is very versatile and easy to use. For example, it can be added to complementary foods, such as a porridge, simply by mixing in the dry powder. Although egg powder seems promising, whole egg powder has not been tested for use, which means intensive investment in consumer insights and social marketing will be required.

.....
“The agricultural industry in Ethiopia is in a period of transformation, and eggs or egg powder may offer a low-cost, high-return solution as a source of quality protein to solve problems of food security and undernutrition among women and children. As egg consumption is currently low in Ethiopia, it is essential that we understand the needs of our consumers first to successfully shift purchasing and consumption decisions.”

Prof. Fekadu Beyene, Commissioner, Environment, Forest, and Climate Change Commission of Ethiopia (former State Minister of the Ministry of Agriculture and Livestock Resources)

.....

We are working with partners in Ethiopia to understand the consumer insights. The insights generated will be used to inform the marketing strategy of a line of novel food products, containing egg powder as a main ingredient, designed for consumers who are at the base of the pyramid, with a specific focus on women and children under 5 years of age.

The consumer insights study will progress through five stages:

Stage 1: Determine ‘what’ our target market eats

Gain insights into the base of the pyramid target market of pregnant and lactating women and caregivers of children under 5 years to examine current eating and child feeding trends, including trends in food purchasing, food choice, food packaging and food preparation.

.....

Stage 2: Evaluate ‘why’ our target market eats those foods

Understand the emotional and psychological drivers for the

feeding choices of caregivers of children under 5, and also the eating choices of pregnant and lactating women, including what motivates them, their aspirations and how the target audience can best be reached.

Stage 3: Develop product concepts

Develop and test product concepts containing egg powder, such as the culturally popular 'shuru' bean powder, instant complementary food porridge containing egg powder, egg powder as an ingredient and other innovative, nutritious food product solutions.

Stage 4: Conduct consumer immersion

Conduct consumer immersion with the products, to understand product usability and provide recommendations on how to improve the consumer's experience of the product.

Final stage: Generate recommendations

Make recommendations on product packaging, price points and promotion strategies, by means of quantitative assessment for the most favored sample products. This stage will identify the geographical areas in Ethiopia that, from the perspective of consumer receptiveness, demonstrate the greatest opportunity for launching an egg powder product.

"Introducing climate-friendly and nutritious products into the marketplace will play a key role in reinvigorating food systems"

In conclusion

Introducing climate-friendly and nutritious products into the marketplace will play an essential role in reinvigorating food systems. A key learning for us, particularly following the MNP investment in Bangladesh, is that efforts to influence customers' product choices by using a traditional educational and informational approach and imparting nutrition knowledge and education will address only a limited number of factors that drive consumer choices. Social marketing principles and consumer insights provide a more-nuanced understanding of the drivers and barriers that influence the design of effective marketing strategies.

Acknowledgement

We would like to acknowledge our partners GAIN, BRAC and ICD-DR,B for their work in Bangladesh, and the government of Ethiopia for their work in food systems. This article builds on research findings and diagnosis conducted in Bangladesh and Ethiopia by our partner *Sight and Life*. The research consisted of stakeholder and consumer interviews as well as mystery shopping, observation and market assessment elements.

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Four Ways Foods Claim to Be 'Healthy'

Front-of-package claims can influence perceptions

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Key messages

- > Foods claim to be healthy either **(1)** by focusing on the positive or the negative, or **(2)** by claiming to have scientifically improved the food or to have preserved its natural properties.
- > As a result, there are four ways to claim that a food is healthy: **(1)** by adding something positive, **(2)** by removing something negative, **(3)** by not adding something negative or **(4)** by not removing something positive.
- > The types of claim found on the front of the packages of breakfast cereals are totally unrelated to the actual nutritional quality of their contents.
- > Nevertheless, the means whereby breakfast cereals claim to be healthy significantly influences people's expectations of how healthy, tasty and fattening they are.
- > Regulators and marketers need to examine how people interpret food claims, not just whether the claims are factually correct.

Imagine a product that is described as 'natural.' It is plant-based and locally grown in America. It is also organic and 100 percent additive-free. It certainly sounds like a healthier choice than oth-

er brands in its category – and that is, in fact, what 64 percent of people who buy it believe.¹ In reality, the natural, plant-based, locally grown and 100 percent additive-free product is ... tobacco, and cigarettes made using this particular tobacco are just as dangerous as any other cigarettes.²

“What people and brands mean by ‘healthy’ is changing”

Perception matters a great deal in eating, and interest in healthy eating is increasing.^{3,4} But what people and brands mean by 'healthy' is changing. It is less about checking nutrition information on products and more about selecting 'real food,' 'clean eating' or following some downright unhealthy ideas peddled on Instagram.

FIGURE 1: Four ways that food may be considered healthy

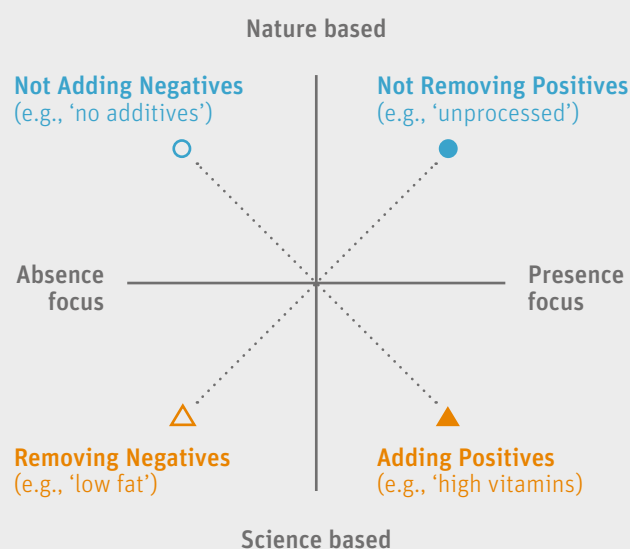
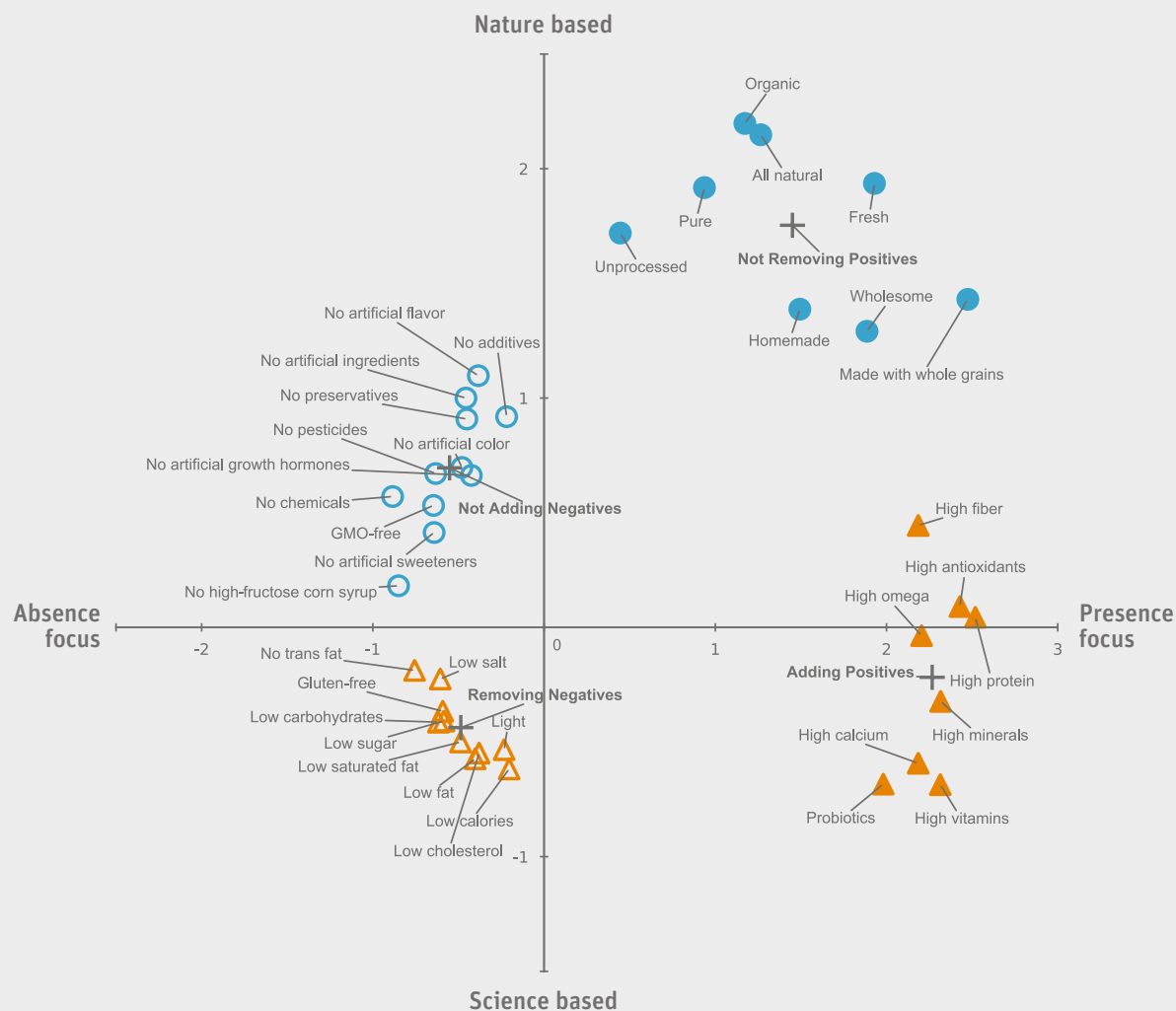


FIGURE 2: Rating of food health claims

In a recent article,⁵ the categorization of front-of-package claims and their impact on consumers' choices and their expectations of taste, healthiness and weight loss was studied. Co-authored with Quentin André of the Rotterdam School of Management and Kelly Haws of Vanderbilt University, this article was published in the Journal of Public Policy & Marketing in 2019.

Healthy through presence or absence, nature or science

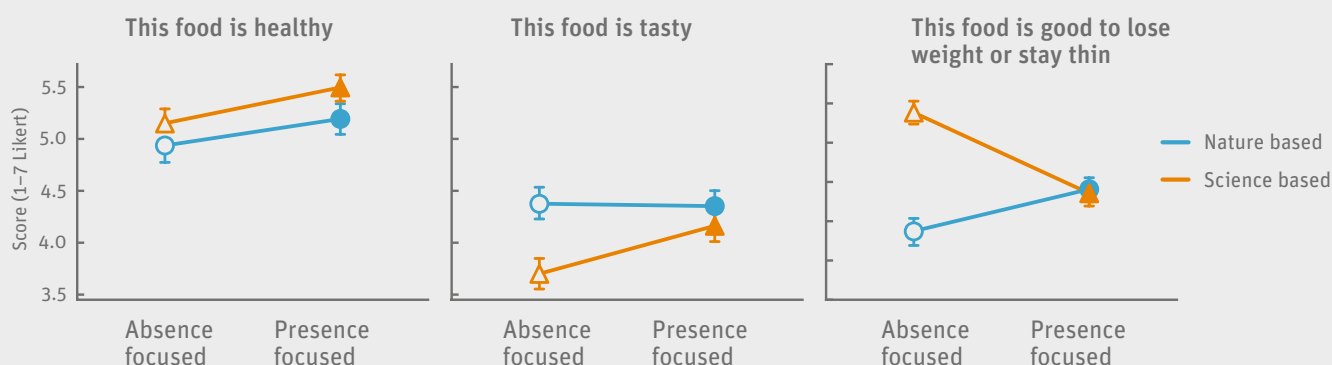
Earlier research had considered food claims at either the macro level – using broad descriptions such as 'healthy' or 'tasty' – or the micro level,⁶ studying single claims such as 'low fat'.⁷ We found a middle-ground solution of four clusters, based on two underlying dimensions:

1. The first dimension is health claims based either on the presence of something good or on the absence of something bad.

2. The second dimension is health claims based either on improving the food (science) or on preserving the food (nature).

The outcome is four distinct ways that food may be considered healthy, as shown in **Figure 1**. A carton of milk, for example, could be 'high in vitamins' (adding positive), 'low fat' (removing negatives), 'no artificial growth hormone' (not adding negatives) or 'all natural' (not removing positives).

We asked 443 people to rate 37 common claims (distilled from a list of 107) on these two dimensions (to prevent survey fatigue, each person rated eight claims). As shown in **Figure 2**, there was no middle ground, and claims clustered well around the four types: adding (or not removing) positives and removing (or not adding) negatives.

FIGURE 3: Rating of food health claims

Perceptions and reality

We examined the consequences of these claims, both perceived and real, in three studies of breakfast cereals – a popular food category in which food claims are common and which often has a 'health halo' despite large differences in actual nutrition quality.⁷ To explore the perceived benefits of different types of food claim, we asked 363 Americans to evaluate breakfast cereal boxes carrying a variety of health messages.

“Consumers had a more positive attitude towards claims based on the presence of something good”

We found that consumers had a more positive attitude towards claims that are based on positivity, the presence of something good, compared with claims that are about the absence of something bad. People expected breakfast cereals with claims about both 'adding positives' ('high protein,' 'high antioxidants,' 'high fiber' or 'high calcium') and 'not removing positives' ('all natural,' 'made with whole grains,' 'wholesome' or 'organic') to be healthier than brands with claims about 'removing negatives' or 'not adding negatives,' even if the messages claimed the absence of something considered to be harmful (see **Figure 3**).

“Are consumers correct in making inferences based on the type of claim that is on the box?”

We also found that when consumers see nature-focused health claims, such as 'homemade' or even 'no preservatives,'

they are inspired to believe the food will be tasty. Finally, if the claim is about removing negatives ('light,' 'low fat,' 'low calorie' or 'low sugar'), consumers believe that the breakfast cereal helps with weight loss or weight maintenance.

The idea that these claims influence perceptions is not that surprising. After all, this is the goal. But are consumers correct in making inferences, particularly about the healthiness of a food, based on the type of claim that is on the box? To find out, we used data from Open Food Facts (<https://world.openfoodfacts.org>), a collaborative, free and open database of food products from around the world, which has food claim and nutrition information for 633 breakfast cereals. This database also provides the Ofcom nutrient profiling score developed for the British Food Standards Agency, which is a validated measure of nutritional quality.⁸ To our surprise, the correlation between the type of 'healthy' claim made and the actual nutritional quality of the breakfast cereal was almost zero (0.04, to be precise).

Predicting food choices, depending on people's goals

Does understanding the four ways brands claim to be healthy help predict what consumers will choose? In our fourth study, we introduced three goals – healthy eating, hedonic eating and weight loss – to see how the type of claim helps predict consumers' choices between different foods with or without food claims. With the help of PRS IN VIVO (www.prs-invivo.com), a leader in shopper and nudge-related research, we randomly assigned 611 breakfast buyers to one of the three shopping goals and asked them to choose between foods with different claims on the label, as seen in **Figure 4**.

Compared with the breakfast cereal and milk carton without claims, all those with any claim at all had a higher probability of being chosen. More importantly, we found that goals influenced the effectiveness of the claims. When choosing a product for taste or health reasons, study participants went for the brands

with the nature-based claims. When the goal was losing weight, however, they selected the foods with the ‘removing negative’ claims, such as ‘low sugar’ and ‘low fat.’ Overall, what consumers expect from food had an impact on their choices.

What’s next for policymakers and marketers?

Although there was no link between the type of claim and overall nutrition quality in our particular product category, consumers expected the type of claim to be a strong predictor of the healthiness, taste and dieting properties of the products. None of the claims we surveyed explicitly said that the product would make people healthier (or help them lose weight or stay thin), yet consumers interpreted these claims as such. And their perceptions influenced their choices.

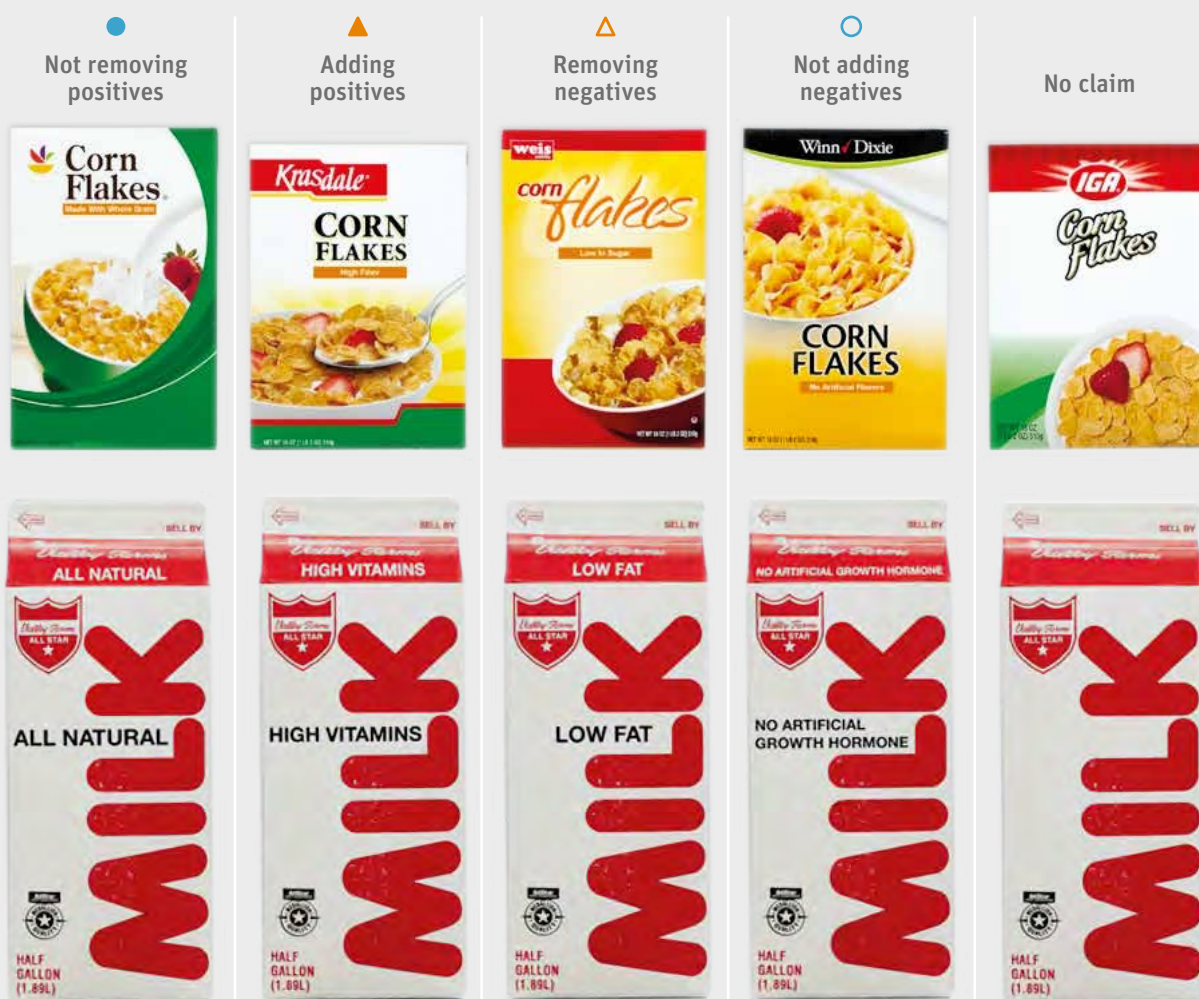
As people are moving away from nutrition-based to nature-based approaches to ‘healthy’ eating, so are food claims. The danger is that claims are receding from nutrition, based on science, towards beliefs based on folk theories or, worse, the

opinions of celebrities.⁹ This should motivate legislators to consider stricter regulation of food claims.

“Claims are receding from nutrition towards beliefs based on folk theories or the opinions of celebrities”

At present, the first principle in the regulation of marketing claims is to ensure that they are not incorrect. This is not enough, however. After all, the tobacco product mentioned at the beginning of this article really is organic and 100 percent additive-free. The problem is the misleading interpretation that this makes it healthier. This is why in 2010 the Federal Trade Commission forced the company producing this cigarette to

FIGURE 4: How type of claim helps predict consumers’ choices



include the disclaimer that “no additives in tobacco does NOT mean a safer cigarette” and why, in 2015, the Food and Drug Administration took action to force it to remove the ‘natural’ and ‘additive-free’ claims altogether.¹⁰

There is no reason why food should be treated differently. Obviously, claims must be accurate, but they should also not be misleading in such a way that consumers might expect benefits that the food cannot deliver. Rather than basing their regulations on what the mythical ‘rational consumer’ would think, policymakers should take into account what real consumers expect from products that carry health claims.

“Policymakers should take into account what real consumers expect from products that carry health claims”

The association we have between nature and health is often true. The advice given by Michael Pollan to “Eat food. Not too much. Mostly plants” is sound.¹¹ Ironically however, the only foods that are universally accepted as healthy are fruits, vegetables and some nuts – that is, the few foods without a claim on the label. This is because they don’t have a label. Nature, as most consumers understand, knows best.

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Diets and Desire

How language can shape demand for plant-based food

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Key messages

- > Descriptive language offers us a powerful yet currently underutilized tool to shape consumer demand for more environmentally friendly products, including food and drink.
- > This article summarizes evidence on the best descriptive language to encourage consumers to shift their choices towards healthier, more plant-based foods.
- > Key recommendations are to avoid referring to plant-based options as 'vegan,' 'vegetarian' or 'meat-free' and find alternatives for words that imply these are healthy and restrictive choices. Instead, language is better used to emphasize flavor, refer to the provenance of a plant-based dish or enable diners to mentally simulate a rewarding eating experience.

The power of language

The fact that Eskimos are said to have 50 different words for snow, Greeks seven words to describe love and Americans 13 different words for sandwiches¹ is thought to reflect a larger truth common to all these cultures: that the language we use influences how we see the world around us. How we talk about objects, events and people not only reflects our familiarity with them, but also actively influences how we experience them in the first place.

The notion that words have the power to shape how we filter information from our eyes, ears, noses and taste buds is not just an obscure theory from linguistics,^{2,3} but shows itself through many practical examples observable in our everyday lives. Probably the most obvious of these is its application to the field of marketing, where language is used to generate desire for all types of consumer goods, including food and drink.

“Language is used to generate desire”

Language and food marketing

Ask a group of participants in a research study to blind test two anonymous brown soda drinks and you will find that Pepsi often wins out in taste over Coca Cola. Ask, instead, that participants drink either a glass labeled 'Coke' or one labeled 'Pepsi' and see how exposure to the brand name will tip preferences towards each participant's prior stated favorite.³ Similarly, other taste tests show that products advertised as containing 'soy' are judged less pleasant than when the same product is tasted without this ingredient highlighted on the label.⁴

And the research goes on: consumers prefer the same cheese when described as 'regular' rather than 'light,'⁵ favor identical soups labeled as containing normal levels of salt rather than 'less sodium' versions,⁶ are more willing to pay for wine described evocatively than when blind tested,⁷ and even show differences in their hunger hormone response when sampling chocolate milkshakes labeled as '620-calorie indulgent' rather than '140-calorie sensible.'⁸

Changing diets

It is no secret that businesses actively capitalize on the fact that language influences expectations and experiences of food in order to boost consumer demand, and work hard to develop the right type of wording to enhance sales of their products.⁹ Recently, however, a new and different audience has begun to consider how to take advantage of the persuasive capabilities of language – interventionists, policymakers and researchers who are looking to find more effective ways to encourage populations around the world to purchase healthier and more environmentally sustainable foods.

“Traditional approaches to encouraging change for social or individual good often fail”

Interest from these groups is rooted in the growing recognition that traditional approaches to encouraging change for social or individual good – that is, population education campaigns or risk communication – often fail.¹⁰ As a result, there is now widespread consensus that better alternatives are needed: interventions that are novel, evidence-based and that will succeed in helping more people to modify their actions for the benefit of their own, others' and the planet's long-term best interests.

The language of healthy and sustainable food

In a heavily saturated food market that offers consumers massive choice across a range of evocatively described products, one potentially 'better' approach is to deploy more appealing descriptive language to sell healthier and more environmentally friendly foods, rather than just those that make a business more money.

Here, the goal is primarily to boost the purchase and consumption of plant-based whole foods and to reduce intake of red and processed meats.¹¹ This is backed up by accumulating evidence that red meat is associated with a far higher environmental footprint than common plant-based alternative protein sources,¹² while processed meats are increasingly linked to serious health problems such as cancer and cardiovascular diseases.¹³

If we consider how language is currently used to portray plant-based products, we can easily see why these options are

rarely the preferred choice. Plant-based foods are often described in ways that emphasize health and virtuosity (e.g., 'light,' 'nutritious,' 'wholesome')¹⁴ – language that unfortunately cues the consumer to think that they will be unfulfilling and flavorless. Compare this with the descriptions of popular meat-based items on the menus of well-known fast food restaurants (e.g., 'flame-grilled,' 'crispy and tender,' 'big tasty,' 'legend,' 'deluxe,' 'mighty,' 'supercharger'), and the difference in framing is clear.

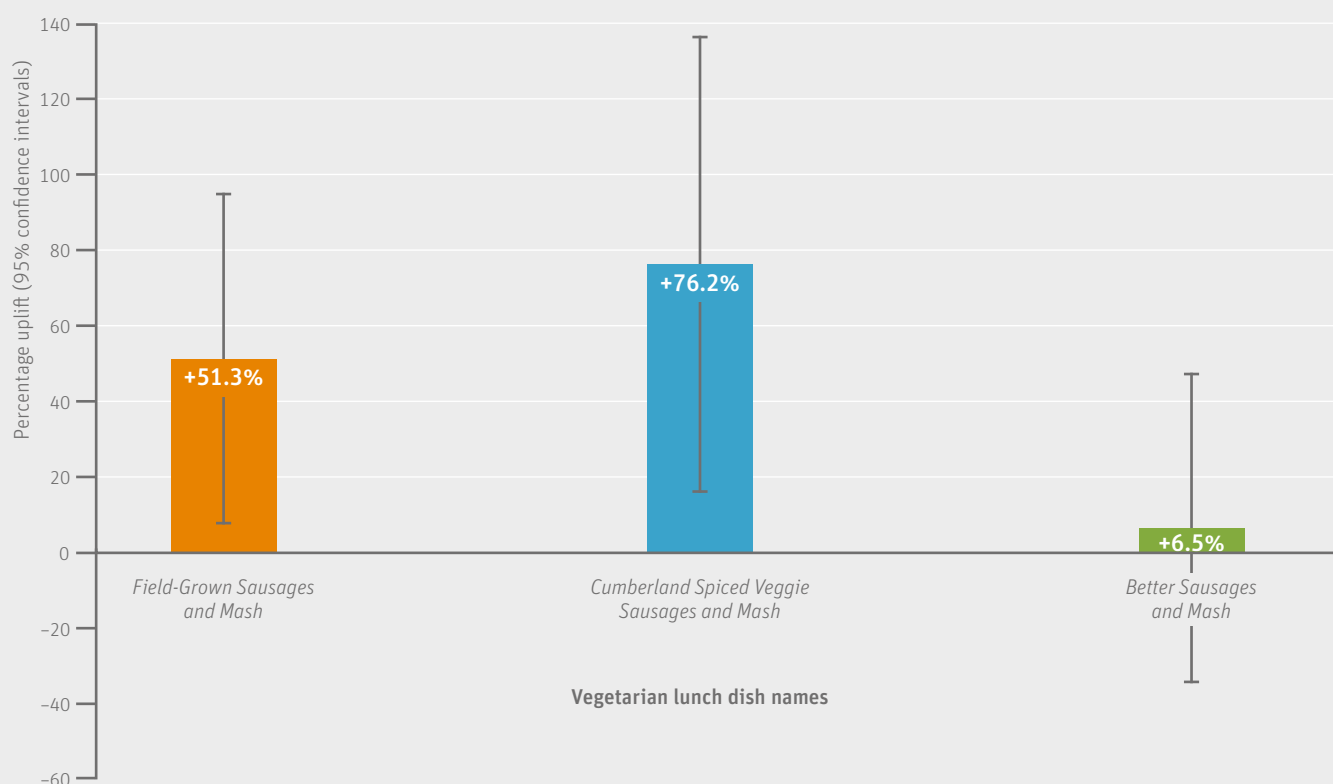
Lessons from our research

If terms that emphasize taste, satisfaction and maximizing value are good for selling more burgers, fillets and nuggets, the question remains as to what is the best language to use if we want to shift more people towards dishes based on pulses, legumes, fruit and vegetables. Here, some indications are beginning to emerge from the literature, including findings from our own research at the Better Buying Lab, a program within the World Resources Institute. These are outlined below as recommendations on how to use language to better promote plant-based foods.

1. Don't use 'meat-free'

Labeling plant-based options as 'meat-free' is a counterintuitive move if the goal is to encourage diners to shift away from meat

FIGURE 1: Change in the sales of plant-based dishes following the introduction of new language in Sainsbury's supermarket cafés



and towards healthier and more sustainable choices. ‘Meat-free’ signals that a dish lacks exactly what most mainstream diners are usually looking for, which can result in plant-based items being filtered over and deselected in the search for something more suitable on the menu.

“The dish name ‘Cumberland-Spiced Veggie Sausage & Mash’ de-emphasizes the lack of meat”

Supporting this point are the results from a four-month field trial conducted by the Better Buying Lab in collaboration with the UK’s second largest retailer, Sainsbury’s supermarket. The aim of this trial was to determine the effect of renaming plant-based options listed on in-store restaurant menus on dish sales. Before the start of the trial, a menu item marketed as ‘*Meat-Free Sausage and Mash*’ was already available to Sainsbury’s customers and was purchased by around 5 percent of them. During the intervention period, however, this dish was renamed as ‘*Cumberland-Spiced Veggie Sausage & Mash*,’ a decidedly more evocative name that de-emphasizes the lack of meat in this vegetarian dish.

The resulting analysis of sales data from 20 in-store restaurants revealed a significant 76 percent relative uplift in sales of the sausage and mash dish following the introduction of the new label¹⁵ – Sainsbury’s considered this result a success, and are now looking at other ways they can use language to market a wider range of plant-based products more effectively (Figure 1).

2. Don’t use ‘vegan’ or ‘vegetarian’

Plant-based foods are often described on menus as the ‘*vegan*’ option – a term that has massively increased in usage in recent years, accompanying the rise in numbers who follow this way of eating.¹⁶ But, is ‘vegan’ really the right language to use if we want to increase the appeal of plant-rich dishes to mainstream diners?

In 2017, the Better Buying Lab commissioned the social media analytics company Brandwatch to analyze 15.4 million Twitter and Instagram posts, blogs and forums from the UK and USA that included references to plant-based, vegan and vegetarian food. Results from this analysis showed the term ‘*vegan*’ was twice as likely to be used in negative contexts than the term ‘*plant-based*,’ suggesting the former is a far more divisive way to describe dishes that don’t include animal products,¹⁷ and so should be avoided if the goal is to increase appeal to a mainstream audience (Figure 2).

These findings are reinforced by further academic research demonstrating that negative stereotypes are often attached to

FIGURE 2: Divisive descriptive words associated with veganism in Brandwatch social media analysis



the idea of veganism (i.e., vegans are ascetics, faddists, sentimentalists, extremists, non-masculine).^{18–20} From this work we see that vegans, and the foods they are presumed to eat, tend to be classified as an unattractive and different ‘out group’ that is actively avoided by the ‘in group’ of mainstream meat-eating diners.²¹ Thus, labeling foods as vegan is likely to have a similar effect as the term ‘meat-free’ – leading diners to automatically disregard these options.

In a similar vein, another recent study by the London School of Economics and advised by the Better Buying Lab found that mainstream diners were 56 percent less likely to order plant-based dishes if these were listed in their own ‘*Vegetarian Specials*’ section on a menu compared with when integrated into the full menu.²² As with the term ‘*vegan*,’ the results of this study indicate that labeling a plant-based dish as ‘*vegetarian*’ is also likely to be an unpopular bet if the goal is to increase mass appeal.

“Labeling foods as healthy can trigger an expectation that these items are likely to be less tasty and satisfying”

3. Don’t use ‘healthy restrictive’ language

Experimental research tells us that labeling foods as healthy can trigger an expectation that these items are likely to be less tasty and satisfying.²³ For example, one study showed a 64 percent boost in enjoyment ratings of the same mango lassi drink when it was labeled ‘*unhealthy*’ rather than ‘*healthy*,’ while others have found consumers’ expectations and actual experiences of indulgent foods, such as cheese and chocolate, are significantly more negative when consumers are told these are healthier versions of originals.²⁴

This association between health and a perceived lack of flavor also holds true for inherently healthy plant-based foods,

suggesting that care needs to be taken in how the benefits of these options are sold to diners. For example, in a 2017 study conducted by Stanford University, researchers discovered that plant-based dishes labeled using ‘healthy restrictive’ language such as ‘*reduced-sodium*’ or ‘*cholesterol-free*’ were chosen less often (down by 41 percent) compared with when described using more flavor-focused language such as ‘*rich*,’ ‘*buttery*,’ ‘*roasted*’ or ‘*zesty*.’²⁵ Based on this work, it seems that one good way to sell more environmentally friendly and healthy plant-based foods is, therefore, to avoid identifying these options as such.

4. Do highlight provenance

If it’s not advisable to highlight the fact that plant-based dishes are healthy or free from meat, then what language does work to boost demand for these options?

Here, research from the Better Buying Lab and the US bakery chain Panera offers us some insight. Across 18 of their sites in the USA, Panera experimented with renaming one of their popular plant-based dishes over the course of a month-long field trial. The chain switched the original label for their ‘*Low-Fat Vegan Black Bean Soup*’ to a new, more compelling ‘*Cuban Black Bean Soup*’ – a simple shift that was accompanied by a 13 percent uplift in soup sales compared with a similar period in the year before.²⁶ (Figure 3).

One of the main conclusions drawn from this trial is that words denoting the provenance of plant-based food can boost demand. Hypothesizing why this may be the case, we conclude that provenance words help to link plant-based foods to positive beliefs, memories or traditions associated with a particular region that resonates well with diners (e.g., a childhood home or a holiday destination), or may create a sense of exoticism or mystique that intrigues diners to try out these choices to satisfy a need for novelty.²⁷

FIGURE 3: Panera’s *Vegan Black Bean Soup*



“Words denoting the provenance of plant-based food can boost demand”

5. Do spotlight the flavor and eating experience

In a 2019 online study conducted by the Better Buying Lab, in collaboration with the UK’s Behavioural Insights Team, a variety of alternative names for plant-based items were tested over eight different example menus taken from a series of real-life restaurants. Of the many different versions that were trialed, the single best-performing name was ‘*Mild and Sweet Chickpea and Potato Curry*.’ This descriptive label, with a strong emphasis on flavor, led to a 108 percent relative uplift in numbers willing to order this dish compared with when it was described in terms of basic ingredients only (i.e., ‘*Chickpea and Potato Curry*’) (Figure 4).

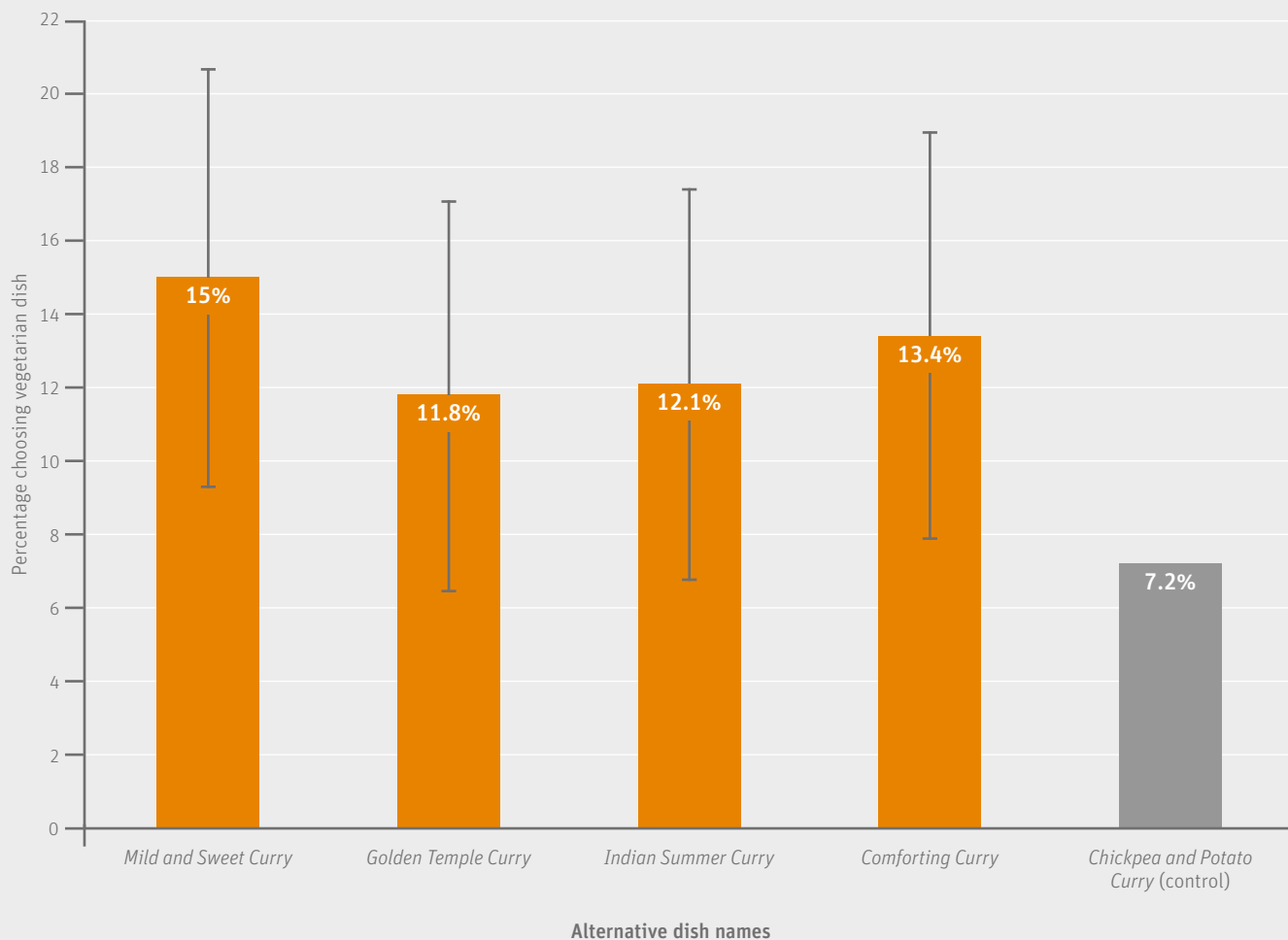
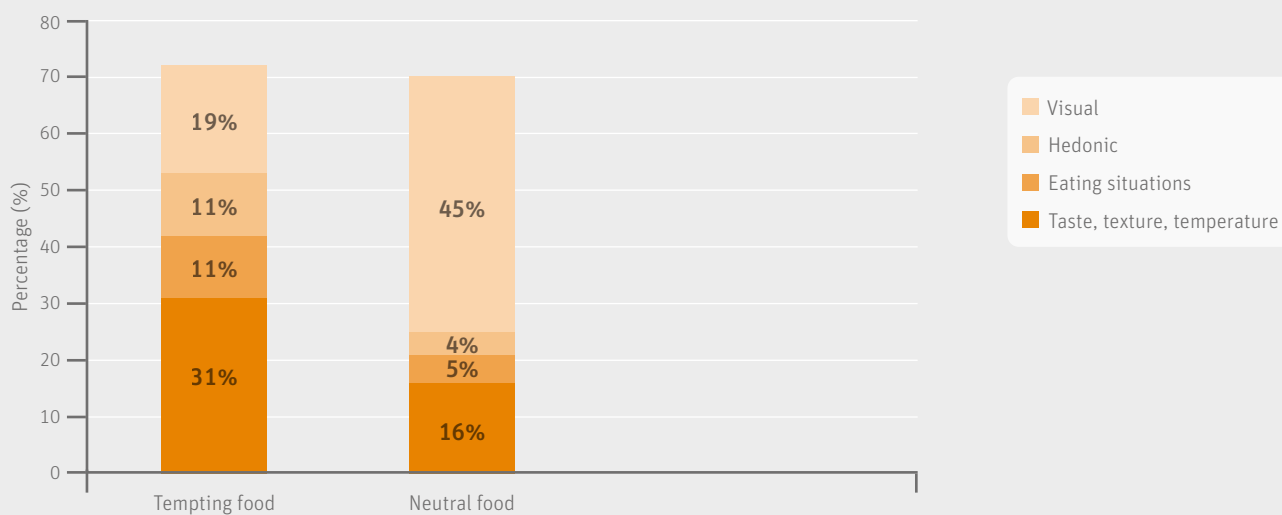
The use of language that spotlights flavor or that evokes elements of the eating experience, such as mouthfeel or texture, is thought to help diners to simulate, or vividly imagine, consuming that food, which in turn triggers a desire to seek out that choice.²⁸ For example, in a recent study comparing the type of language people tend to use when describing foods commonly rated as more tempting (e.g., vanilla ice cream, cookies, chips) versus less tempting (e.g., cucumber, apple, banana, rice), far more terms relating to taste, texture and temperature were generated for tempting foods, implying richer mental representations of these compared with less tempting options²⁹ (Figure 5).

“Language offers us a powerful tool to influence choice and is also hugely scalable”

Conclusions

Together, these insights offer some guidance on how language can be used to create more positive expectations and experiences of plant-based foods, enabling us to better sell the benefits of these options. Instead of informing consumers of the health and environmental risks associated with their dietary choices, research conducted by ourselves and others shows that words would be far better used to craft descriptions of the flavor, provenance or eating experience. Language offers us a powerful tool to influence choice by crafting desire, and is not only a relatively cheap intervention to implement, but is also hugely scalable, implying large potential for impact.

An additional and important benefit of this approach is that it makes sense to food businesses. While a range of other be-

FIGURE 4: Difference in the choice of plant-based dishes when described using flavor-emphasizing language versus regular language**FIGURE 5:** Results of a Utrecht University study showing differences in the type of language generated for more tempting versus less tempting foods

havior change interventions exists, including carbon emission labeling, offering plant-based foods as the default and applying a surcharge to meat dishes, modifying language is an activity that is easily implementable by businesses, aligns with existing marketing activities and is likely to be acceptable to consumers as it does not directly infringe on their choices.

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Human-Centered Design and Innovative Research Methods for Healthcare

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Key messages

- > Human-centered design (HCD) solves complex social problems by empathizing with the user at the core of its processes.
- > HCD leads to health interventions that are scalable, impactful and sustainable.
- > Diverse, innovative methods such as role-play and online user advisory groups bring about new ways of knowing and lead to contextual insights.

Making services more usable and useful

Health and wellbeing are influenced by a number of intricate, interrelated factors. Improving health is thus one of the most multilayered social challenges to address.¹ Health interventions often struggle to move past the pilot stage or are unable to achieve scale, impact or sustainability.² A primary reason for inefficient interventions is the inability to adequately address the complex interplay among politics, economics, social norms and culture-specific practices.³ In an effort to deliver impactful, scalable and sustainable services, a deep understanding of the people who will benefit and interact with the services (referred to as ‘users’ in this article) is required. Therefore, any innovative approach that puts empathizing with the user at the core of its processes has the potential to augment health interventions.³ One such approach is HCD.

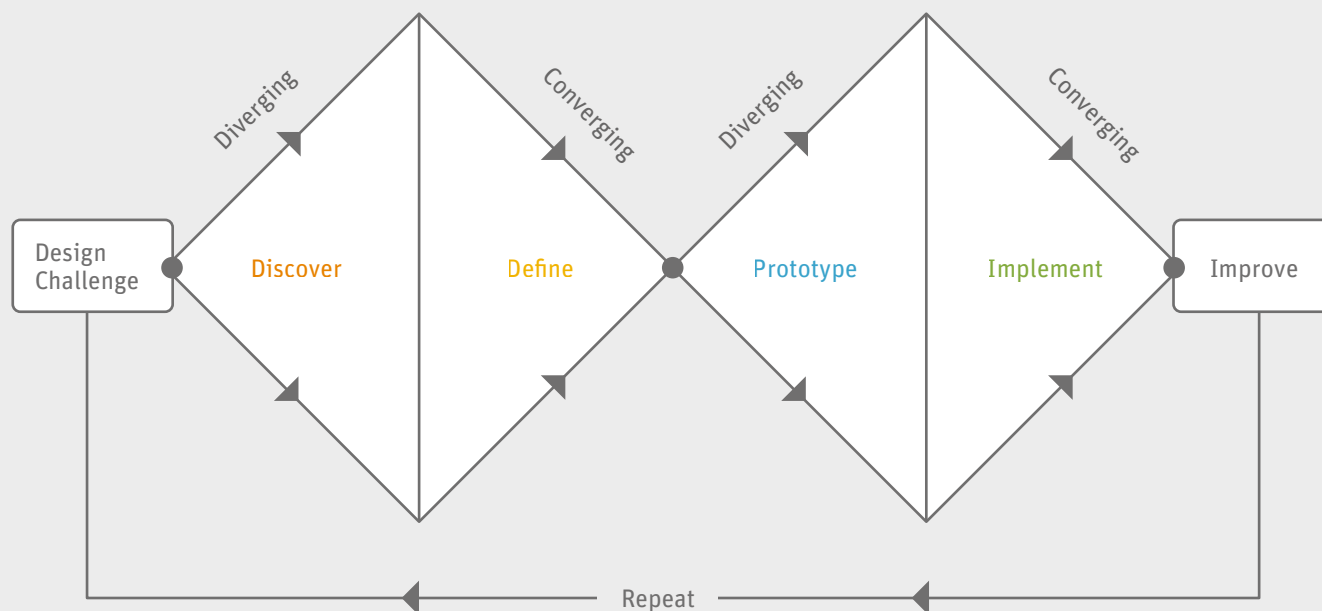
HCD is an iterative, creative approach to solving complex social problems.⁴ It aims to make services more usable and useful by prioritizing the users’ contexts, needs and experiences.⁵ The process puts the human first by involving them from conception through to the implementation and iteration of ser-

vices that are tailored to their needs. The result is a solution designed with, not for, users.

“Any innovative approach that puts empathizing with the user at the core of its processes has the potential to augment health interventions”

While the HCD process has many forms, one proposed model suggests five key phases, namely Discover, Define, Prototype, Implement and Iterate (**Figure 1**). ‘Discover’ is about thoroughly exploring and defining the problem, building empathy, and gaining a deep understanding of the users and their current context – meeting them in their reality. ‘Define’ is a process of synthesis and interpretation. This phase involves translating findings from the Discover phase into insights that inform the design problem and identify opportunities that guide the ideation process.⁴ The Define phase is the stage at which collaboration from all stakeholders is most beneficial to generate ideas and identify possible solutions for the problem that is to be addressed. These solutions are made tangible through the Prototype phase, during which a series of low- to high-fidelity prototypes are tested with users. The Prototype phase is also iterated to create a refined solution that can be brought to life in the Implementation phase.⁴ The last phase, which is crucial, but often omitted, is the Improve phase (**Figure 1**). The Improve phase is all about agile development and consistent iteration. The service is optimized based on real user data – the experience is refined through analyzing what works for users. This phase involves smaller cycles of the design process to refine and add elements to the intervention.

Rooted in empathy, HCD is well suited to addressing the issues within health and wellbeing. Over the past decade, HCD has been increasingly applied to public health problem-solving.⁶ These interventions and studies have experienced the value of

FIGURE 1: The human-centered design approach

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HCD and highlighted risks and challenges to consider when applying the approach to healthcare. An example of one challenge is that moving through a series of low-fidelity prototypes and multiple rapid iterations risks negative health outcomes. This causes reluctance to create prototypes of interventions when morbidity is in question.⁶ To lower this risk, there are alternative approaches to low-fidelity prototyping in healthcare such as storyboarding to illustrate a new clinic process.⁶

Qualitative research is used to explore social phenomena through learning about a participant's reality.⁷ HCD proposes that qualitative research methods should be used to inform every phase in the process. Observation, interviews and focus groups are some of the methods used to paint a picture of how users perceive and behave in their environments. Qualitative research can also show how users interact with the problem that is being addressed – in their natural context.³

Unfortunately, some of the qualitative research methods frequently used take the user out of context and do not reflect the true nature of the intended observation. For example, users are transported to a location outside their setting to participate in a focus group. However, removing the user from their usual environment may be unavoidable for a number of reasons, such as a widely spread demographic, lack of resources within the setting, costs, safety or when the intervention in question cannot be transported.

“There is a need to embrace diverse methods that will bring about new ways of knowing and lead to contextual insights”

Therefore, there is a need to embrace diverse methods that will bring about new ways of knowing and lead to contextual insights. Fortunately, innovative research methods now exist that capture insights into the user's context regardless of whether the researcher or designer is immersed in their environment. The following two emergent methods are discussed: role-play and user advisory groups via instant messaging platforms.

Role-play

Role-play allows the researcher to assign people certain scenarios and roles. Through observing the improvised scenario-specific performances, the researcher can capture insights into people's emotional, physical and social experience. This could inform the design or refinement of an intervention at any phase in the HCD approach.



A young girl acts as a mobile phone while her peers illustrate how they would log into a mobile website to access sexual and reproductive health information in Johannesburg, South Africa

In the Discover phase, role-play can be used to gain a deeper understanding of the users' contexts, how the problem affects them, and their experiences and needs. Role-play scenarios refer not just to people doing a memory recall to illustrate their actions, behaviors and habits. In addition, role-play allows users to take up the roles of other people in their environment or of stakeholders relevant to the intervention. For example, a role-play can be prompted by the researcher using the following instruction: "Within groups, demonstrate how a member within your community would go about finding the right medication for their illness." This prompt may result in a performance during which each group member represents a role within the journey of diagnosis and treatment.

In addition, role-play allows people to explore a concept and show how they envision interacting with it in their context. Through the freedom of users role-playing their own ideas and perceptions of possible solutions, the results are less affected by researchers' and designers' biases and assumptions. For example, users act out how they wish to interact with pharmacists when collecting their medication instead of being told what that interaction should look like. Furthermore, role-play can be considered as a type of prototype that makes an idea tangible enough to elicit a response without requiring a lot of time and effort to create.

.....
"Role-play bridges the gap between what users say they do and what they do in reality"

Role-play bridges the gap between what users say they do and what they do in reality. The nonverbal is as important as what is heard. Body language, eye contact, facial expressions and tone of voice introduce nuanced topics for discussion that have likely not been addressed in a traditional interview setting. Lastly, the act of taking on the role of someone else in a staged situation provides a sense of anonymity. It creates a 'safety net' for the users to dramatize something that they previously experienced, witnessed or even just imagined. By being under the veil of a character, they are able to freely express their views and share embarrassing or sensitive experiences.

Role-play is a very powerful HCD method. In conjunction with debrief discussions, role-play uncovers deep user insights without the heavy investment in time and resources. Discussions after each role-play are crucial to gathering reliable information.⁸ Performances may often depict an exaggerated truth as users dramatize for comic effect. The researcher may also deliberate-

ly or unknowingly assign unfamiliar roles to users, which may result in a performance of unreliable events. However, with the help of probing discussions that address the ‘why’ behind their actions, it is possible to sort the information into facts, vacuous truths and perceptions, and to understand users’ knowledge, attitudes and behavior. The following questions are helpful to initiate such discussions:

How typical is this character in your community?

Why did the character address the situation in this way?

An additional analysis tool is recommended to aid the capture and synthesis of the observed role-plays. An empathy map is a visualization tool that maps user attitudes and behaviors. It is typically split into five sections: what the user says, thinks,

does, feels and aims to achieve in the specific scenario (**Figure 2**). Its simplicity allows the observer to take notes and plot findings while observing the performances.⁹ However, getting users’ consent to film the performances is essential so that it can be referred to when completing a comprehensive empathy map. The mapping process reveals gaps in existing user data. In this way it allows the observer to initiate discussions to gather further information directly after the scenarios are performed. The observer, in this case, refers not only to the researcher. Role-play provides an opportunity to empower users to take part in the research by interpreting their peers’ role-plays. The process of peers observing peers allows the researcher to obtain a more nuanced version of events through the users’ interpretations of their attitudes, opinions and hopes. The empathy map provides a means to create a shared understanding of the target user and aids decision-making.⁹

FIGURE 2: A typical empathy map

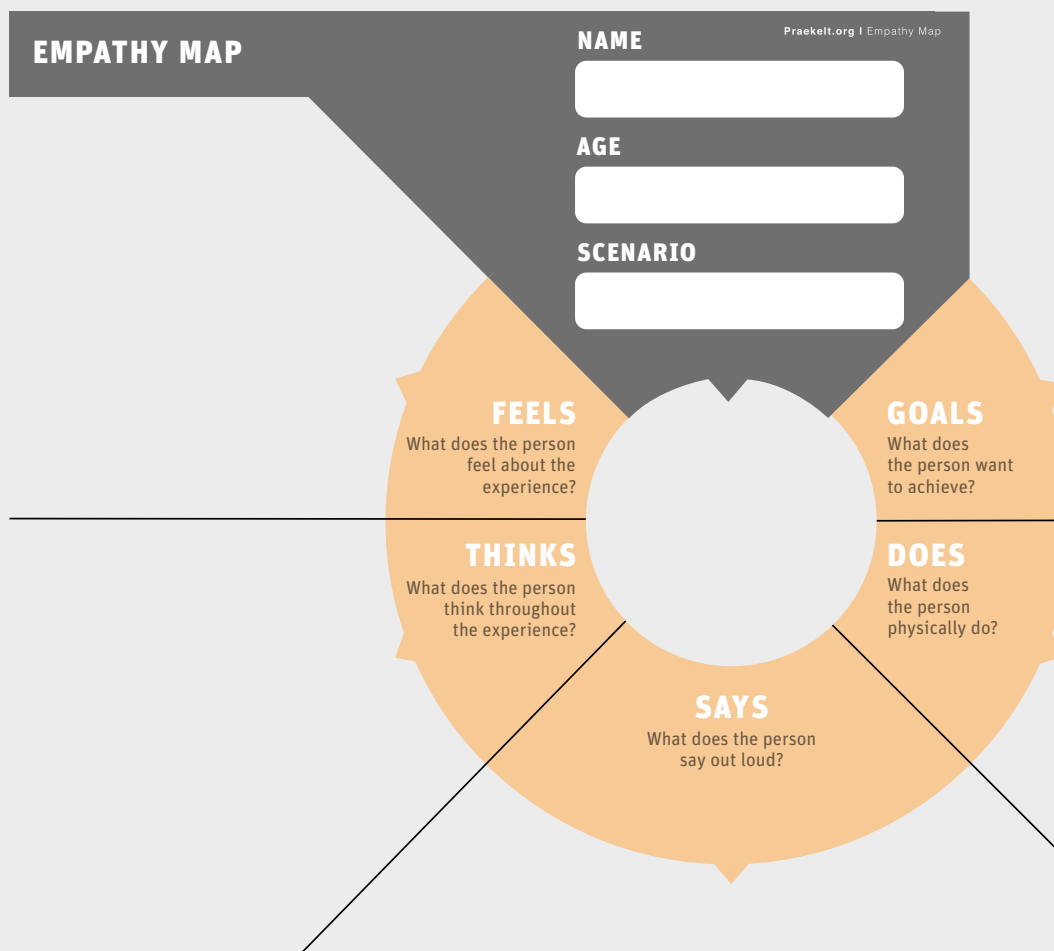
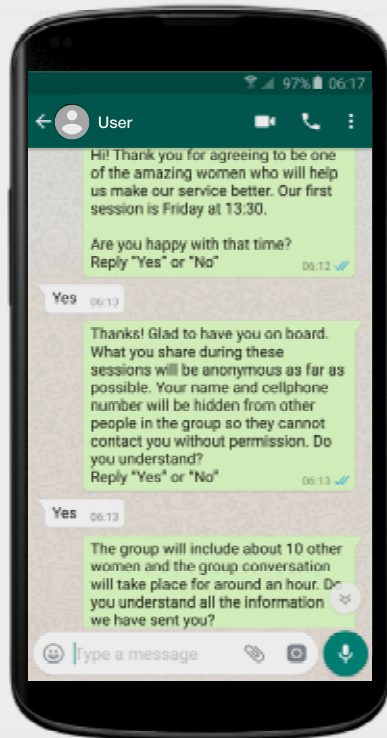


FIGURE 3: Enrollment of users onto Praekelt.org's User Advisory Group



Users who consented to participate in Praekelt.org's User Advisory Group were sent a set of automated messages that incorporated the participation and consent information in text form, which had previously been explained over the telephone

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“The empathy map provides a means to create a shared understanding of the target user”

Role-play and empathy maps are very effective when meeting target users face to face. However, practical constraints, including the time and monetary costs of qualitative research, have historically limited the feasibility of participatory research. In addition, many of the strategies behind qualitative research methods are one-off activities and do not allow for sustained involvement throughout the HCD approach. As access to the internet and mobile phones are becoming ubiquitous, opportunities are arising to leverage tools such as instant messaging platforms to engage with users throughout an HCD approach.

User advisory groups via instant messaging platforms

Mobile technologies are increasingly being applied across the spectrum of primary healthcare. Because of their interactive nature, instant messaging platforms can be used to facilitate participatory research and design; they are also an inexpensive, widely available means to communicate with hard-to-reach populations.

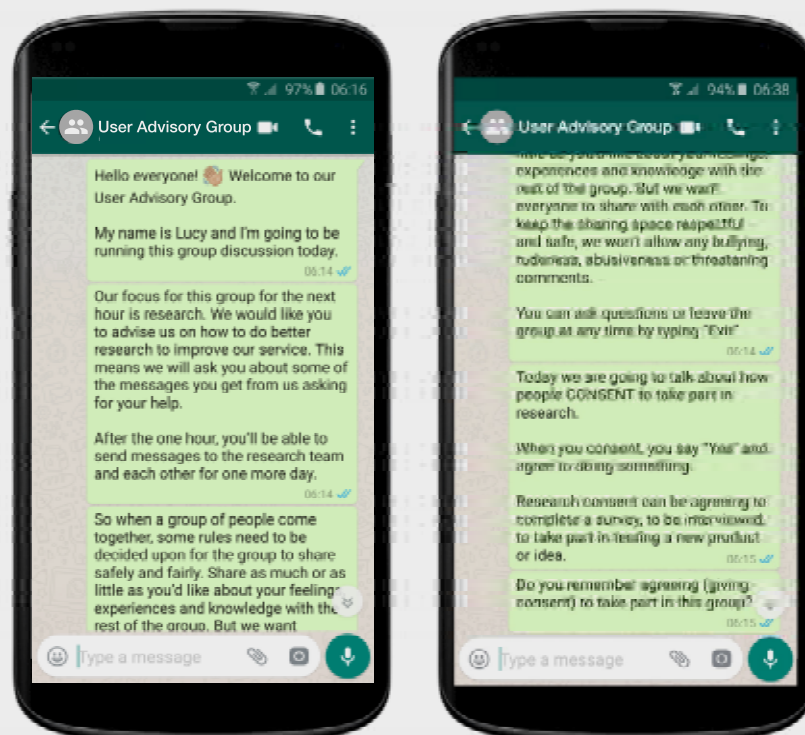
Praekelt.org is conducting a study by developing and facilitating anonymous user advisory groups via WhatsApp.¹⁰ Praekelt.org is a South African nonprofit organization that works with mobile and digital tools and platforms to improve people's lives. Praekelt.org has developed a method to anonymize contacts within WhatsApp groups. This creates a safe space within which to facilitate scalable, inclusive participatory models. Users can be randomly sampled and share their insights without having to leave their homes (Figures 3 and 4).¹⁰

As with other forms of qualitative testing, it is important that the researcher creates and communicates participation guidelines. A research framework and a prepared script with appropriate and relevant questions need to be prepared. Listening and responding to users is essential to show them that their feedback has been acknowledged. A sense of anonymity is preferable, especially when sensitive topics are addressed. However, this is not a requirement to conduct focus groups using channels such as WhatsApp, as long as participants are aware of any risks involved and consent to participate in the process.

Instant messaging platforms such as WhatsApp have a unique set of advantages and limitations and are not meant to replace traditional face-to-face interviews or focus groups. Through involving mobile users in the research process and creating a democratic, open and safe space for them to communicate, advisory groups allow researchers to better understand the complexity of interventions and the complexity of the social contexts in which interventions are tested.¹¹

“HCD has the potential to help move health interventions to scale faster by incorporating contextual and human factors from the early phases of problem-solving”

HCD has the potential to help move health interventions to scale faster by incorporating contextual and human factors from the early phases of problem-solving. The approach prioritizes the needs of the user by valuing wellbeing and user satisfaction, in contrast with traditional health conventions. HCD allows for a number of qualitative research methods so as to ensure the

FIGURE 4: Topic guide for the User Advisory Group

The User Advisory Group sessions were facilitated by one facilitator who followed a topic guide related to digital consent procedures

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continuous iteration, refinement and improvement of services. The choice of the methods used depends primarily on the questions posed, the stakeholders involved, the skills of the researcher and the sociocultural environment that is being addressed in the intervention. However, innovative methods such as role-play and online user advisory groups are useful considerations when resources are limited. They make it possible to design impactful, sustainable interventions.

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Nudging Diet Change for Health and Sustainability

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Key messages

- > For the global population to eat more healthily and sustainably, we must change our diets, for example by consuming less ruminant meat.
- > ‘Nudges’ are a promising starting point for large-scale change, as they are evidenced to be effective, can be rapid and cost-effective to implement, and do not reduce choice.
- > We recommend a broad range of strategies under three themes:
 - > Making it *easy* involves creating an ‘enabling environment,’ such as making sustainable and healthy options the default, and increasing availability.
 - > Making it *appealing* can be achieved by changing the framing of existing products, as well as by developing new products.
 - > Making it *normal* harnesses our social identity and tendency to adopt the behavior of ‘people like us.’

Our food system is driving widespread health problems, and is unsustainable. While millions suffer from undernutrition and millions more from obesity, collectively we are consuming the Earth’s resources faster than they can replenish themselves. Given the growing population, and growing per capita consumption of processed, fatty and meat-centric diets, both the global health challenges and environmental threats look set to get worse.

“Our food system is driving widespread health problems, and is unsustainable”

However, several recent studies show that it is possible to flourish on a diet that is both healthier and more environmen-

tally sustainable.^{1,2} Encouragingly, worldwide adoption of a healthy diet would generate over a quarter of the emission reductions needed across all sectors by 2050.³ The changes needed are complex, as the specific nutrition issues and the environmental impacts of consumption and production vary by region. But significant improvements can be achieved with some simple substitutions, such as eating less red meat and more legumes, whole grains, vegetables and nuts.³ Indeed, reduced red meat consumption would contribute to at least nine of the 17 UN Sustainable Development Goals.^{4,5}

How, then, can we achieve such change? Behavioral science must play an important role here. After all, our diets are deeply habitual, strongly influenced by automatic decision-making,⁶ and rooted in culture and identity. We must also navigate the complexities of public consent, together with incumbent interests, subsidies and policies tending to favor the status quo,⁷ and political rhetoric framing diet choice as a matter of deep personal sovereignty and long-standing tradition, and therefore something that is too precious to meddle with.⁸

“Food companies in the UK spend 27.5 times more on promoting junk food than the British government spends on its flagship healthy eating campaigns”

An appetite for change

A brief look at human history shows that this latter point is not well founded. Our diets have always been in flux, and have often been deliberately influenced. Foods initially regarded with suspicion soon become staples, such as the ‘devil’s apple’ introduced to Europe in the 16th century – now commonly known as the potato. Its success was in part due to concerted promotion by the government,⁹ and indeed government intervention in our diets continues to this day, most obviously for public health: ‘traffic light’ calorie labels, taxes, and bans on the advertising or sale of junk food near schools are just a few examples.^{10–12} Industry influence is even more powerful (and not always in the public interest): for example, food companies in the UK spend



Healthy and sustainable food choices must be made easy, and the ‘choice architecture’ is key

27.5 times more on promoting junk food than the British government spends on its flagship healthy eating campaigns.¹³ We therefore should not underestimate the extent to which dietary change is possible, and indeed likely, over the next few decades. However, to start this journey we must operate within the realms of public and political acceptability. Though the biggest wins may ultimately come from the boldest policies, such as carbon taxes to incentivize industry reformulation and innovation, such policies may be some way away. We need to start small, and start immediately. We think a good first step is to nudge.

Nudges, by definition, offer policymakers, restaurant managers, retailers and others the tools to softly influence behavior without diminishing freedom of choice.¹⁴ They are often rooted in small changes to our environment, or to the framing of options, that are designed to leverage our sensitivity to these cues and sway us towards certain outcomes. For example, putting healthier food near supermarket checkouts, or at eye height, can encourage healthier purchases without reducing product choice.¹⁵ These techniques will not be enough on their own, and we need to be cautious that their use does not undermine appetite for bolder policymaking,¹⁶ but they may be the perfect starting point, and they have the potential to trigger a virtuous circle: a minority of consumers eating more healthily and sustainably can drive producers and retailers to improve and increase their offerings, which further normalizes these choices and further

shifts the ‘choice environment’ towards more healthy and sustainable food.

.....
“Nudges offer the tools to softly influence behavior without diminishing freedom of choice”

So what would these nudges look like? In short, we need to make healthy and sustainable food consumption *easy, appealing and normal*.¹⁷ Let us consider each of these requirements in turn.

Making it easy

A key insight that emerges throughout the behavioral sciences is that it is often more effective to change the environment or context within which a behavior emerges than it is to change people’s minds. Values and knowledge are rarely enough: for example, even when individuals care about the environment, they only tend to act on those concerns when it is easy to do so.¹⁸ Indeed, most people want to eat more healthily and more sustainably, but do not.¹⁹ This is because much of our behavior is automatic, bounded by limited willpower and knowledge, and driven by nonreflective cognitive processes in response to contextual cues.²⁰ A wealth of evidence shows that eating behaviors

in particular are more likely to be shifted by changes in context than in attitudes.^{21,22}

And so we must adopt strategies that create an ‘enabling environment’ for nutritious and sustainable diets, removing all practical and psychological barriers. For example, we often stick with the default, preset option,¹³ so why not make healthy and sustainable food the default at catered events or on flights? Similarly, people are more likely to choose options that are more available:²³ consider simply increasing the proportion of options that are healthy and sustainable (say, from 1 in 4 options in a canteen to 2 in 4). Other modifications to the ‘choice architecture,’ such as putting the healthy and sustainable options first, also have a modest impact.²²

It is also the case that behavior change is much easier, and thus more likely, if prompted at certain times. One of these key moments is simply the time of purchase: labels and prompts are more effective when delivered at this decision point compared with wider education or awareness-raising efforts.²⁴ So one simple strategy would be to prompt shoppers to consider a substitute at the point of checkout during an online grocery shop. Other key moments for intervention are occasions when habits are disrupted or yet to be set. Just as we are more likely to start cycling to work when we move house (Behavioural Insights Team trial)²⁵, we might be more likely to learn a new recipe when we have bought a new kitchen, or more open to new food habits when we have just started university and are learning to cook and shop for the first time.

Making it appealing

Although many people are aware of the nutrition quality of their food, and awareness of the environmental impact of food is increasing, we generally do not prioritize these concerns when choosing our food. In the USA and Europe, the most common

considerations are taste and enjoyment, cost, convenience, freshness and quality, and health, roughly in that order.^{26,27}

In other words, we should not be naïve in expecting consumers to sacrifice their enjoyment, their convenience or their wallets in order to consume healthily and sustainably. We need to harness other motivations wherever we can, and this means we need genuinely appealing options that happen to be good for us and the planet. Partly, this involves promoting the development of new products and reformulating existing favorites. For example, soft drinks manufacturers reformulated their products with reduced sugar content in response to the UK sugar tax;¹¹ a producer-facing carbon tax could drive analogous changes in other products. However, we can also achieve a lot simply by reframing and remarketing existing options. For instance, the language used to describe healthy and sustainable food is often uninspiring. Indeed, people perceive food labeled ‘healthy’ to be less tasty and less filling, and among meat eaters, the term ‘vegetarian’ has strong associations of ‘not for me,’ and of being light and unsatisfying.^{28,29} In studies that we ran with the World Resources Institute, we found that changing product names – using labels such as ‘field-grown’ instead of ‘meat-free,’ or highlighting the provenance and flavor of a meal – increased ordering rates among meat eaters as much as twofold.³⁰

.....
“We need genuinely appealing options that happen to be good for us and the planet”

Making it normal

Humans are deeply social creatures: we define ourselves by our membership of social groups, and we conform to group norms.³¹ Interventions communicating the desirable social norm are one of the most well-evidenced approaches in the applied behavioral sciences. For example, at the Behavioural Insights Team, we reduced the overprescribing of antibiotics in the UK simply by telling doctors that they were prescribing more antibiotics than other doctors in their area.³² This principle yields similar results in diet choices, even when the behavior we want to promote is not yet the majority behavior, by communicating the desirable trend (‘dynamic norm’) – that is, “more and more people are adopting nutritious and sustainable diets.”³³

The downside of social influence is that we tend to distance ourselves from ‘others’ with whom we do not identify, and this is a barrier to widespread dietary change. For example, in many cultures, vegetarian food has a strong and coherent niche identity – partly one of abstemiousness, weakness and femininity³⁴ – against a backdrop of ‘normal’ meat eaters. A ‘masculinity makeover’ within the vegetarian food industry may therefore be



Plant-based food must be appealing

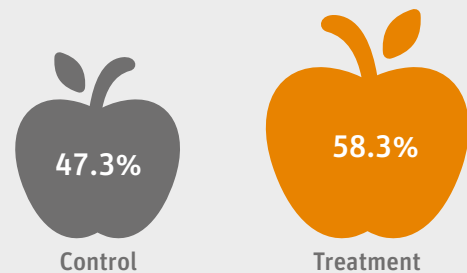
necessary, but we can also make simple changes to shop layouts and restaurant menus to help address this sense of ‘otherness.’ Although segregating vegetarian options into their own shop aisles or menu sections is common practice, it is in fact not helping: it reduces the likelihood of these offerings being chosen by a meat eater, whereas integrating the options helps a wider range of people choose plant-based food.^{35,36} This principle of integration could similarly be applied to other types of food, for example by providing healthier alternatives alongside their traditional counterparts.

“Nudges can be applied almost anywhere people choose food”

Putting it into practice

These nudges can be applied almost anywhere people choose food, from shopping in a supermarket (in-store or online) to ordering meals when booking a flight. And they can be implemented by almost anyone, at any scale, from a global restaurant chain to a school cafeteria. We recently hosted the annual Behavioural Exchange conference, and could not resist the opportunity to run a trial ourselves. We developed two versions of the menu and sent these to delegates before the conference, asking them to preselect their food preferences. A random half received the ‘control’ menu, which reflected common practice: terms like ‘meat-free’ were used for the vegetarian options, which were in a separate labeled section, and slightly more decadent phrasing for the meat options, which were listed first. The ‘treatment’ menu had exactly the same options, but listed the vegetarian choices first (making them *easy*), described them more decadently compared with the meat options (making them *appealing*) and integrat-

FIGURE 1: There was a 23% increase in the percentage of vegetarian options chosen when they were framed as more appealing and integrated into the menu. With each person making 8 choices, the treatment resulted in an extra 168 vegetarian dishes being selected.



ed them into a single list with the meat dishes (making them *normal*). Despite no difference in the range of options available, no attempt to mislead and no restrictions on freedom of choice ... well, judge the results for yourself (**Figure 1**).

We expand on the themes of this article in a long-form report entitled ‘A menu for change: using behavioral insights to promote sustainable diets around the world,’ which can be downloaded from www.bi.team/publications/a-menu-for-change/.

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We are social creatures, and social norms, peer influence and culture play a big role in our dietary choices

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Food-Based Recommendation

Improving dietary intakes among pregnant and lactating women in Rajasthan, India

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Key messages

- Food-based approaches reduce nutrient gaps through foods that are consumed at meals, but snacking is usually not explored as an eating occasion.
- A study carried out in Rajasthan in 2017 shows that foods consumed through meals may meet 100 percent of the Recommended Daily Allowance (RDA) but are 5.6 times more expensive than snacks. Snacking 2–3 times per day

may meet 25–50 percent of the daily RDA for calories and nutrients, depending on the food combinations.

- Given the large nutrient gaps among pregnant and lactating women (PLW), significant household resources are needed to meet their nutritional needs. Gender-sensitive interventions that could help address inadequate intakes include food vouchers for milk and fruit, fortification of roti flour and targeted supplementation during pregnancy and lactation.

Background

Despite significant improvements during the past decade, maternal malnutrition remains a key public health problem in India.¹ Maternal anemia prevalence is 50 percent,² and 23 percent of women are thin (body mass index < 18.5 kg/m²).¹ Rajasthan is one of India's low-income states,³ with < 25 percent of women of reproductive age having completed 10 years of education and 35 percent of women getting married before the age of 18.⁴ Early marriages (pregnancies) and lack of education are associated with low birth weight (< 2.5 kg),⁵ and almost 23 percent of Rajasthani children are born with low birth weight.⁴ During pregnancy and lactation, vulnerability to malnutrition increases because of the higher nutrient needs of the fetus, the expansion of the placenta and maternal tissues, and the physiological demands of milk production. These needs are particularly acute for women living in rural areas, who remain active as farm workers throughout pregnancy and lactation.

Food-based approaches to address maternal malnutrition among PLW are popular because they build on and fit with habitual food patterns.⁶ In areas with strong gender inequities, the challenge with any food-based recommendations is women's access to food.⁷ Food access also depends on the level of prestige or value assigned to the foods that are being promoted.⁸ Because most of the calories that are ingested are obtained



Wives examine a storage box for storing snacks in their bedroom

© Prachi Pandit

through meals, the ‘default’ recommendation is to recommend more foods at meals to bridge nutrient gaps. Rarely, however, do we critically examine snacking as another route. To this end, the Children’s Investment Fund Foundation (CIFF), in cooperation with the Government of Rajasthan, commissioned a mixed-methods study to examine the feasibility of food-based approaches to support improved nutrient intakes among PLW.

“Rarely do we examine snacking as another way to address maternal malnutrition”

Methods

This mixed-methods study had two key objectives: first, to identify low-cost foods to fill nutrient gaps; and second, to assess the cultural feasibility of food-based recommendations. IIHMR University conducted the Optifood study to answer the first objective, while *Sight and Life* led the formative research study to answer the second objective.

The Optifood study was applied to identify low-cost foods that meet Indian RDAs for pregnant, lactating, and nonpreg-

nant, nonlactating women.⁹ An Optifood methodology consists of dietary data (as 24-hour recall data) and food cost data.¹⁰ The Optifood software optimizes cost and nutrient requirements, and retrieves an output that consists of a food list, frequency and portion size.¹⁰ Given the gender inequities and food norms of Rajasthani women in low-income communities, the Optifood lists were further assessed for cultural feasibility through a formative research study (see Monterrosa,¹¹ for further discussion).

Study area and sampling

The Optifood study relied on two rounds of household surveys: one in the wet season and another in the dry season. Udaipur, Baran and Barmer districts were sampled, and participants were selected using random and probability proportional to size (PPS) multi-stage sampling. In each district, 600 PLW over the age of 18 were sampled, along with 120 nonpregnant and nonlactating women. The final sample size was 2,160 women.

During February and March 2017, data was collected for the formative study among urban and rural women in the same three districts as those in the Optifood study. We sampled 23 PLW for in-depth interviews, eight women for full-day home observations, and participants for 12 focus group discussions: four groups composed of PLW, four of husbands and four of moth-



Focus group discussion among husbands about foods and snack options for their wives

ers-in-law. The formative study also included a short validation phase during which another round of focus group discussions, in all three districts, was completed with PLW ($n = 3$), husbands ($n = 3$) and mothers-in-law ($n = 3$).

Dietary assessment and market study

Dietary intake data were collected using a food frequency questionnaire and the 24-hour recall method in both of the rounds. The qualitative food frequency questionnaire included 218 coded items (from 14 food groups) that were locally available, and the frequency of consumption and seasonal availability were noted for each food.

A survey of the market prices of foods, from both formal markets and informal stores, was also conducted using the standardized instrument ProPAN,¹² and the average price was calculated for every district.

Formative research study

This study specifically informed the feasibility of the Optifood recommendations by asking: (a) are women allowed to eat more

of the same foods at meals, (b) in addition to meals, what are the other eating occasions, and (c) which of the Optifood food-based recommendations are economically viable and culturally appropriate? The formative research study methodology was described in detail by Monterrosa.¹¹

Data analysis

Dietary intake data was entered using Microsoft Access. Using the food composition table published by the Indian Council of Medical Research (ICMR), foods were analyzed to extract energy (kcal), protein (g), fat (g) and micronutrients. Median intake (food serving size) and weekly frequency of foods and food groups at meals for each target group were entered in Optifood software, along with the average cost per 100 g of an edible portion of each food item. The Optifood food list included foods that were eaten by more than 5 percent of the women. Finally, all data were compared with RDAs suggested by the ICMR.

Socioeconomic data were analyzed with SPSS 21 using bivariate cross tabulation, central tendency. The qualitative data analysis has been described in detail elsewhere.¹¹ Transcripts underwent an in-depth textual analysis with a mix of predefined and emergent codes based on an initial conceptual model of food choice for women in Rajasthan.

Results and discussion

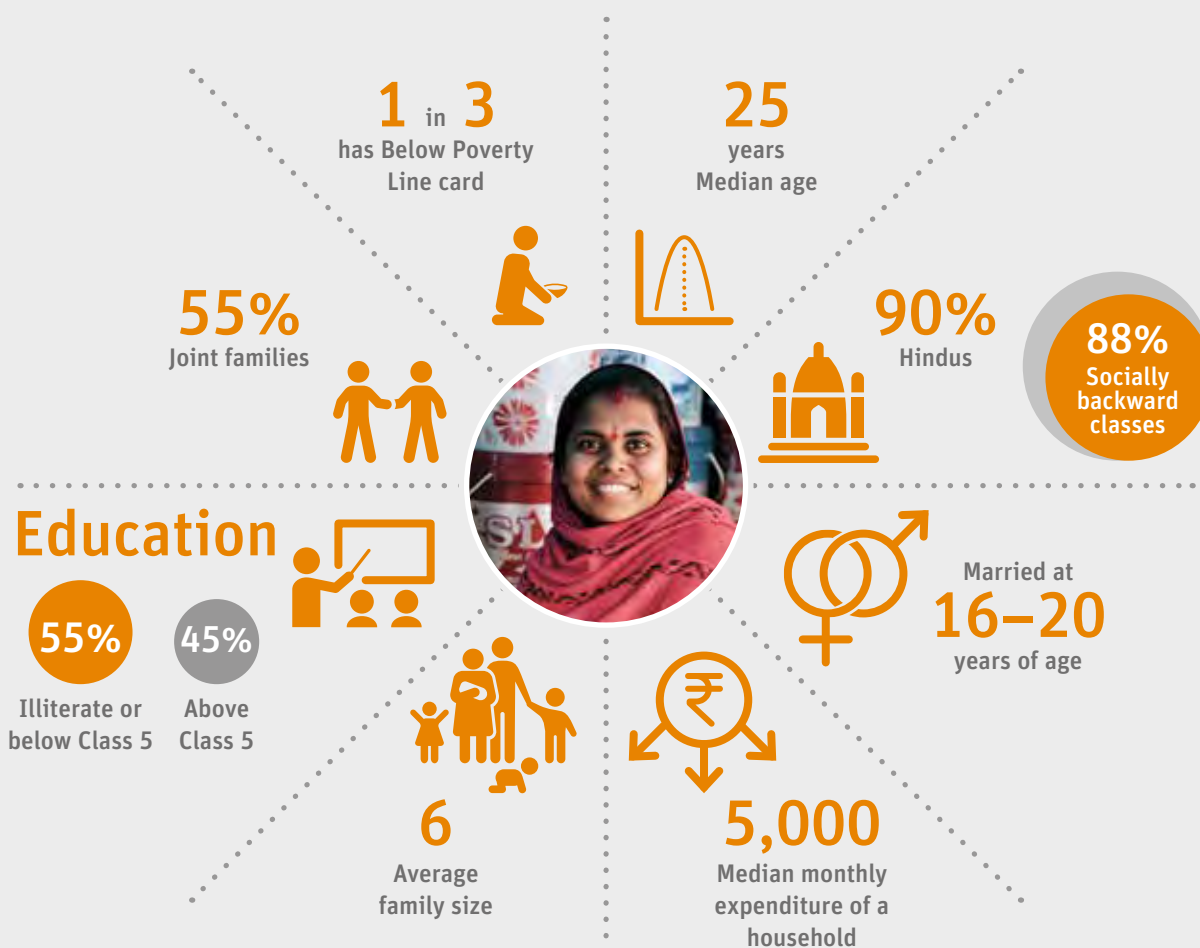
The participant profile is shown in Figure 1. Sixty percent of women were aware of messages related to nutrition and breastfeeding. With regard to household decision-making, PLW's participation in decision-making becomes prominent when their husbands are involved: > 80 percent of women were involved in decision-making in nuclear families, and about 50 percent in joint families.

The 24-hour dietary recall revealed 114 foods were consumed by the women. However, of these, only 46 were consumed by > 5

TABLE 1: Comparison of nutrient gaps for lactating and pregnant women at different life stages and nonpregnant, nonlactating women*

	Energy (kcal)	Protein (g)	Fat (g)	Calcium (mg)	Iron (mg)	Zinc (mg)	Vitamin A (µg)	Vitamin C (mg)
Lactating women (0–5 months)								
Lactating women (6–11 months)								
Lactating women (12–23 months)								
Pregnant women (0–5 months)								
Pregnant women (6–9 months)								
Nonpregnant, nonlactating women								

*Gaps were calculated as (average intakes – RDA)/RDA, and are expressed as percentages; average intakes are for all three districts (Baran, Barmer and Udaipur) and for each life stage 0–20% gap 21–40% gap 41–60% gap 61–80% gap 81–100% gap

FIGURE 1: Sociodemographic summary of study participants

percent of the participants and were included in the Optifood analysis. The food lists, however, varied for each target group, ranging from 29 foods for nonpregnant and nonlactating women to 41 foods for pregnant women (0–6 months). Cooking oils, sugar, wheat flour, buffalo milk, onion, tomato, potato, butter-milk, garlic, cow milk, buffalo ghee and green gram beans were the food items most widely consumed by all of the PLW. Current average household expenditure on a PLW is INR30/day.

The nutrient gaps for PLW at each stage are presented in **Table 1**. Nonpregnant, nonlactating women are shown for reference and demonstrate that significant gaps already exist at this life stage, which are further compounded by the increased nutritional needs generated by pregnancy and lactation.

Food-based recommendations given by Optifood to close the gaps, along with the quantities, are presented in **Table 2**, from most to least expensive. The cost of a nutritionally adequate diet was INR60–70/day/woman, about US\$0.90–1.00, across all life-stage groups. Not surprisingly, most of the foods were ingredients found in dishes that are served at meals.

“Mealtimes are not the ideal eating occasions for improving nutrient intakes”

Feasibility of foods recommended as meals

Data from qualitative research revealed that mealtimes are not the most ideal occasions for improving nutrient intakes. “If she is eating four times, then the other family members are also eating four times. For that, you have to earn a lot.” The custom of shared family meals is too strong in this context to support dietary recommendations for the woman alone. Any meal-based recommendation for large families (more than five adult members) would become prohibitively expensive if household income is < INR344/day (US\$5/day). We found that in general women feel hungry, and do want to eat more food, but fear to do so. Prevailing ideas of ‘eat too much and you are lazy,’ ‘selfish-

TABLE 2: Optifood food-based recommendations and costs to meet 100 percent of Indian Recommended Dietary Allowances for pregnant and lactating women*

Recommendations for a pregnant woman (6–9 months)	Serving size (g or mL)	Cost in INR	Cost in US\$
Six and a half servings of milk, buttermilk or curd	80.43	30.84	0.48
Four servings of cereals or millets	82.35	12.00	0.19
Four servings of vegetables	62.92	6.46	0.10
One serving of orange	180.00	5.14	0.08
Three servings of fats or oils	70.23	5.37	0.08
One and three-quarter servings of pulses	26.82	4.31	0.07
One egg three times <i>a week</i>	55.00	2.37	0.04
Two and a quarter servings of sugars	18.24	1.33	0.02
One serving of potato	101.00	1.21	0.02
Total cost per day		69.03	1.08

Recommendations for a lactating woman (0–5 months)	Serving size (g or mL)	Cost in INR	Cost in US\$
Five servings of milk, buttermilk or curd	140.55	25.71	0.40
Four servings of cereals or millets	81.18	12.17	0.19
Three servings of fats or oils	19.78	9.74	0.15
Four servings of vegetables	60.87	6.00	0.09
One and a half servings of pulses	25.36	3.57	0.06
One serving of banana	120.00	3.13	0.05
One egg three times <i>a week</i>	54.20	2.33	0.04
One serving of nuts	6.13	1.33	0.02
One serving of potato	94.70	1.14	0.02
One serving of <i>gond</i> (edible gum)	9.80	0.99	0.02
One and a quarter servings of sugars or jaggery	24.05	0.76	0.01
Total cost per day		66.87	1.05

*Data are presented for only the most nutritionally demanding life stages, and recommendations are per day unless otherwise indicated; these diets do not meet the daily requirements for vitamins B₁₂ and A

ness’ and the mother-in-law stating ‘too many luxuries now for PLW’ were quite prominent reasons for food restrictions. Fears of miscarriage and complicated childbirth also scared women into eating less.

Meal-based recommendations posed another barrier: the kitchen was the domain of the mother-in-law, and starting the stove required her permission. So, we explored other occasions for improving nutrient intake, such as teatime and snack time, because these occasions fit with prevailing ideas of how much women could eat (see Monterrosa¹¹). Snacks such as rabdi and lassi (two fermented, milk-based beverages) and fruits consisted of foods that did not require cooking on a stove and were accessible to all family members when purchased. Other eating occasions were morning and afternoon tea,¹¹ where morning tea might be taken with a dry chapati leftover from the dinner meal.

“Optifood methodology revealed that a low-cost diet was locally available and acceptable”

In Table 3, we show how we adapted Optifood recommendations for snacking, easy storage (in the couple’s bedroom) and portability (carried on the PLW’s person in a small pouch). We took the Optifood list and prioritized affordable non-meal items, leaving out foods that are seasonal (e.g., green garbanzos). Next, we selected foods with a high protein content and prioritized ‘low-status’ foods (roasted chickpeas and groundnuts). Last, we adjusted down the frequency of consumption for lassi, butter-

milk and biscuits, to keep in line with the food norms for women. The average cost of our snack food suggestions was INR12/day (US\$0.17/day). For a pregnant woman in her last trimester, who snacked 2–3 times per day, this would provide on average 270 kcal/day and 8 g protein/day.

Summary and reflections

Optifood methodology was extremely useful in revealing that a low-cost diet was locally available and acceptable to close most of the nutrient gaps. Even though it was low-cost, it was far from affordable. The cost of a high-quality diet for women is about INR60–70/day, and families were spending only half of this amount. A cash incentive of INR30/day for pregnant women and INR40/day for lactating women will help to improve the uptake of recommendations. However, to meet the nutritional needs of PLW, the actual cash transfer investment would need to be higher, owing to the strong meal-sharing culture and food norms for women.

The formative study revealed restrictive food norms for women. It is clear that social sanctions and permissions need to be activated to support women to eat more food. Mothers-in-law are more likely to support food-based recommendations if they are affordable and fit the prevailing ideas of ‘do not over-eat,’ ‘take food in small amounts’ and ‘abide by sanctioned eating times.’ We have previously described the role of husbands in supporting food access for their wives.¹¹ While it is difficult to overtly challenge prevailing gender norms on food access, we can use the existing norms to support equity of food access for women and normalize higher food consumption among social influencers. The Government of Rajasthan, with support from CIFF, is considering launching ‘Champion,’ a statewide behavior change communication campaign to motivate husbands and mothers-in-law to encourage PLW to eat more and better.

“The Government of Rajasthan, with support from CIFF, is considering launching a campaign to motivate husbands and mothers-in-law to encourage PLW to eat more and better”

This research study also highlighted the significant nutrient gaps among PLW, especially for those living in joint families. While snacking might be culturally feasible, the promotion of healthy snacks cannot close this nutrition gap. On the other hand, a food-based intervention closes the nutrition gap, but it is not culturally appropriate because of the gendered eating practices. So, what to do in this scenario? We suggest that, in addition to sensible snacking that is culturally appropriate, other practical food-based approaches that are gender-sensitive might include: (a) mandatory fortification of roti flour (e.g., with vitamins B₁₂ and A); (b) cash transfers or vouchers to support the consumption of nutrient-rich foods that can be shared with women, such as fruit and milk;¹³ and (c) vouchers for food supplements that are rich in fats including omega-3 fats.¹⁴ Other approaches would include the provision of multiple micronutrient supplements during antenatal care and well-baby care to close nutrient gaps among PLW.¹⁴

Acknowledgements

We would like to thank the women and men who participated in this study for their willingness to share the food culture of Rajasthan with us.

TABLE 3: Optifood food-based recommendations and their modifications based on the formative research study

Optifood food list recommendations	Snack food recommendations*
1. Rice flakes, biscuits, dry toast	1. One cup of tea with biscuits or dry toast or roti
2. Whole-wheat and chickpea flour roti (flatbread), sprouted moong bean dal, sprouted legumes, green chickpea or boiled channa (chickpeas)	2. One handful of channa (chickpeas); enjoy them any way you prefer: roasted or boiled, lightly salted or with jaggery
3. Roasted or soaked groundnut, sweet sesame laddoo (macaroon)	3. One handful of groundnuts
4. Paneer (cheese), doodh patti (tea with milk), kadhi (gravy made of chickpea flour and yogurt), rabdi (homemade sweet condensed milk), kache doodh ki lassi (water with milk mixed in a 2:1 ratio)	4. One glass of milk (e.g., cow, buffalo)
5. Arbi (taro root), potato, tinda (Indian squash), tori ghia (sponge gourd), brinjal (eggplant), sanjhane ki phalli (moringa drumstick), kachri (cucumber), guarphali (green beans), peas, tomato	5. One glass of your favorite lassi
	6. One glass of rabdi
	7. One fruit (fresh)

*Consume 2–3 foods every day, between meals

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[Dr Monterrosa led the formative research study during her tenure as Sr Scientific Manager, *Sight and Life* – Ed.]

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Designing Future-Fit Food

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Key messages

- > Our health and planet are paying the price for the current food system, which threatens food security through accelerated climate change.
- > We can innovate ourselves out of our situation by designing foods that aim to provide a nutritionally complete diet and minimize environmental impact.
- > Through Future-Fit Crops and nutritionally rich diets, we can counter the significant burdens of the current food system and contribute to healthier people, a healthier planet and a healthier economy.

“The global food system is becoming increasingly streamlined and has failed to provide global food and nutrition security”

Living in the Nutritional Paradox

The global food system is becoming increasingly streamlined in the pursuit of economies of scale, to the point that 75 percent of the world's calories come from only 12 crops and five animals.¹ This streamlining has failed to provide global food and nutrition security. We denote this failure as the Nutritional Paradox, and characterize it through four distinct burdens caused by the way the food system currently works: hunger, obesity, micronutrient deficiencies and the destruction of our planet.

- 1) **Hunger, stunting and wasting:** The world already produces enough food to feed 10 billion people,² more than required for the population today, yet paradoxically many still go to bed hungry. According to the Food and Agriculture Orga-

nization of the United Nations (FAO), globally 821 million consume insufficient calories.³

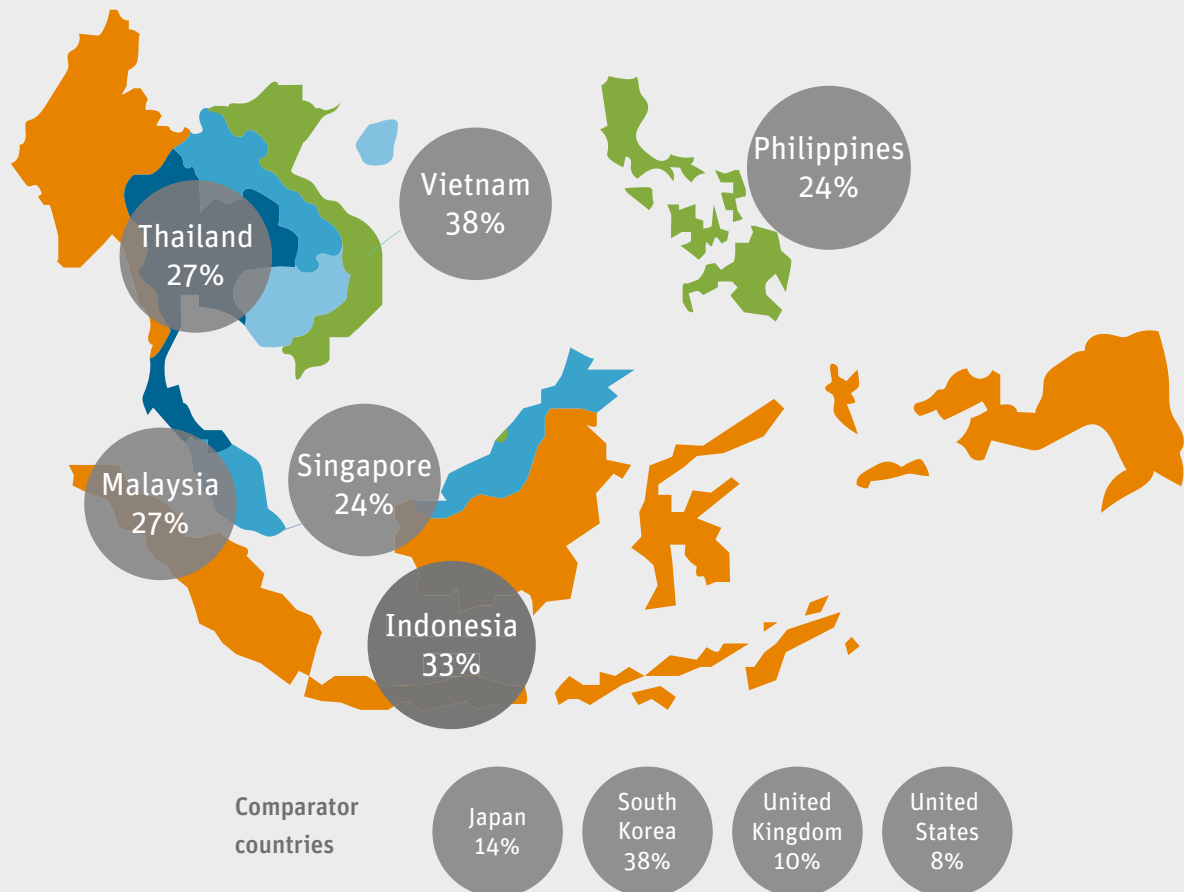
- 2) **Overweight and obesity:** Hunger paradoxically coexists with overweight and obesity, in the same country, and often even in the same household. As high-calorie, unhealthy diets are becoming more prevalent, body mass is increasing across the world; the World Health Organization (WHO) estimates that 2.1 billion adults are already overweight or obese⁴ (Figure 1).

- 3) **Micronutrient deficiencies:** The FAO estimates that some 486 million people remain undernourished in Asia and the Pacific.⁶ Paradoxically, even overweight and obese people eating large amounts of food can, and do, suffer from micronutrient deficiencies.⁷⁻⁹ The reason for this is that many of the foods we eat today are calorie-rich and nutrient-poor, because of our heavy reliance on only a dozen crops.

- 4) **Planet destruction:** To cope with growing demand, the food industry directly and indirectly destroys the ecosystem that provides us with a stable food supply. Every second, one football pitch of forest is converted into agricultural land, yet we depend on forest for climate stability and preventing soil erosion.¹⁰

The world's population is projected to reach 9.8 billion by 2050,¹¹ and there is increasing awareness that the global food system needs radical change in order to feed the world diets that are both nutritious and sustainable.⁴ Environment and nutrition experts are increasing pressure on the food industry to change its practices. Future food product development will need to disrupt the status quo and innovate us out of our current situation. This article explores how food product development must go hand in hand with consumer behavior and planet-friendly agricultural practices in order to achieve the goal of improving the health of the people, planet and economy.

“Future food product development will need to disrupt the status quo and innovate us out of our current situation”

FIGURE 1: Increase in the number of obese people (%) from 2010 to 2014

Data from the Tackling Obesity in ASEAN: Prevalence, Impact, and Guidance on Interventions report⁵

Food design for crop diversity

One solution to assist with resolving the burden of hunger, stunting and wasting is to encourage and help introduce crop diversity in the agri-food system. This is a complex and challenging matter, involving multiple stakeholders with different interests. We advocate creating strategic partnerships with organizations that have the courage to take the risks that are intrinsic in incorporating new ingredients, adopting more environmentally sustainable practices and working towards achieving economies of scale for highly nutritious products.

The food industry has the opportunity to help create new markets for alternative crops and to provide alternative means of income for smallholder farmers, especially those whose land is degraded, and in turn to positively impact the communities around them. To put this in perspective, an estimated 450 million farmers are currently cultivating < 2 hectares of land – yet together they support a population of around 2 billion people.¹²

“We envision a holistic system from which farmers, industry and consumers will all benefit”

We envision a holistic system from which farmers, industry and consumers will all benefit. This should start with the selection of nutrient-rich crops that are resilient to climate changes and can be grown economically on marginalized or degraded land – for example, bambara groundnut, moringa and lupin.

The next step is to scale up plant breeding programs and implement agricultural systems relating to these crops to ensure that high yields can be obtained under local climate conditions. The availability of the resulting crop seeds and the transfer of know-how to local farmers will assist them with transitioning away from existing staple crops. The final step is to develop processing technologies that incorporate these crops into the food system and result in products that consumers can buy.

TABLE 1: Comparison of the nutritional composition of NamZ high-protein noodles and market comparators

	NamZ high-protein noodles (per 100 g)	Benchmark averages* (per 100 g)	Content of our noodles compared with the average instant noodle on the market
Energy	433 kcal (1,818 kJ)	466 kcal (1,957 kJ)	7% fewer calories
Fat (g)	8.9	18.0	51% less fat
Carbohydrate (g)	64.7	66.0	
Dietary fiber (g)	3.3	1.8	83% more fiber
Protein (g)	23.6	10.0	136% more protein
Sodium (mg)	443	396	

*Benchmark averages were calculated by averaging the nutritional information of two readily available, off-the-shelf instant noodle products (values correct at the time of printing)

In our effort to redesign an Asian comfort food, the instant noodle, we were able to incorporate a crop – for example, bambara groundnut – that was foreign to the processing industry by creating cost-effective technologies and processes. Taking care not to refine out the existing nutrients, we were able to create a high-protein noodle that tastes and smells exactly like fried instant noodles (Table 1). In support of smallholder farmers, we established a supply network of bambara groundnut in Ghana, West Africa.

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**“No matter how healthy it is,
if it doesn’t taste good,
I won’t eat it”**

Solving obesity through taste preferences

Taste, price and convenience are the key drivers in consumer food-related purchasing choices. In relation to our product development, taste is our key concern. In our recent consumer interviews, one participant remarked, “No matter how healthy it is, if it doesn’t taste good, I won’t eat it.” We examined where taste preferences come from, with the aim of designing novel food products that suit the tastes of the modern consumer.

The foundations for our taste and food preferences are formed from the very beginning of life. Amniotic fluid and mother’s milk will both take on flavors from the mother’s diet, which will affect a baby’s taste preferences as it progresses to solid foods.¹³ According to studies of eating behavior, unfamiliar foods are often refused by children eight to 15 times before being finally accepted by them.¹⁴ Children often prefer sweet and salty tastes, and



NamZ high-protein noodles containing bambara groundnut



Presentation of our noodle technology at a cooking demonstration

they shun sour and bitter tastes – a reaction that can be traced back to an evolutionary adaptation to avoid new and possibly dangerous or poisonous foods.¹⁵ Taste can therefore be considered a learnt behavior. When creating new foods or recreating existing foods for consumers, particularly in the case of children, taste preferences and variance from their existing diet need to be taken into account.

In our consumer study to find an alternative for a favorite Indonesian condiment, a sweet soy sauce that is used in classic Indonesian dishes, we found co-creating taste between generations was part of the family bonding process. Younger members of the family are often prone to experimentation as well as being health-conscious and environmentally aware, whereas older members stick strictly to the way ‘it has always been done’ or ‘how your father likes it.’ As one of the participants in the study mentioned, “When I modernize my family’s traditional dishes, I may make some changes but unless it tastes like the original, my parents will not eat it.”

To introduce new food products that offer new or alternative flavors via a healthier choice of ingredients and processing choices, we look to the young and to soon-to-be caregivers as the force of change. Appealing to their sense of self-empowerment and willingness to experiment is crucial if buying habits are to be changed, but at the same time it is important not to stray too far from the traditional. Two examples we chose

to develop are Asian family favorites: *kecap manis*, the Indonesian sweet soy sauce, and the Asian comfort food, instant noodles.

A delicate balance between ‘new and better’ and ‘old and familiar’ must be upheld in order to win hearts and minds of the young and old alike.

.....
**“A delicate balance between
 ‘new and better’ and ‘old and familiar’
 must be upheld in order to
 win hearts and minds”**

Nutritionally conscious consumers

The majority of the population of the urban world live in ‘obesogenic environments’ – defined as environments where convenient access to inexpensive, rich, tasty, energy-dense, micro-nutrient-deficient and fiber-poor foods makes it difficult to buy and eat healthier, often higher-priced, foods. Rapid economic growth, as experienced in parts of Asia during recent decades, does not necessarily go together with better food choices. As seen in China, with rising incomes, the consumption of Western-style convenience food has increased¹⁶ in contrast with that

TABLE 2: Sample nutrition information panel for prepackaged food in China¹⁹

项目 Items	每 100 克 (g) 或 100 毫升 (ml) 或每份 per 100 g/100 ml or per serving	营养素参考值% NRV%
能量 Energy	千焦 (kJ)	%
蛋白质 Protein	克 (g)	%
脂肪 Fat	克 (g)	%
碳水化合物 Carbohydrate	克 (g)	%
钠 Sodium	毫克 (mg)	%

Recreated from National Food Safety Standards translations

of healthier options. In Malaysia, the GDP per capita increased from US\$7,101 in 1980 to US\$23,267 in 2015, and this rise in income fueled increased food consumption, particularly of processed foods.⁵

While consumer awareness of nutrition has come a long way in recent years, it is interesting to note that, according to Nielsen's recent Global Ingredient and Dining-Out Report,¹⁷ Asian consumers primarily define healthy food by the absence of undesirable ingredients. The four top ingredients cited by Asia-Pacific respondents as necessary to avoid were artificial preservatives, artificial flavors, artificial colors, and antibiotics or hormones used in animal products.

Conducted in Beijing in 2016, a cross-sectional survey with 380 participants from four suburban communities and 308 urban-dwelling supermarket shoppers highlights the difference between awareness of an undesired ingredient, in this case salt, and the translation of that awareness into an understanding of the information on packaging. The study found that 91.3 percent of the 688 participants were aware of the harmfulness of excessive salt intake,¹⁸ but only half of the participants (52.3 percent) were able to connect salt with the term 'sodium' as listed on the mandatory nutrition information label. Extremely few partic-

ipants (5.5 percent) reported that they understood the meaning of Percentage of Nutrient Reference Values (NRV%). Furthermore, when purchasing prepackaged foods, only 12.6 percent reported that they frequently or often read or checked the sodium label when purchasing¹⁸ (Table 2).

Another factor is the consumer understanding of terms used in product promotion. Take the term 'superfood,' for example. In a recent consumer interview we conducted, one participant based her whole concept of healthy eating around avocados. As long as she ate at least one avocado – her 'superfood' – every day, she felt she had made healthy choices. However, from a nutrient diversity perspective, this participant's diet is far from ideal.

Designing communications that effectively communicate the nutritional quality within the brief moment when the purchasing decision is made will broaden consumer awareness, and every effort the food industry makes towards education and transparency will help. From a food product development point of view, we want to assist consumers with achieving nutritionally complete diets. Our goal is to create a full range of food products that will allow a consumer to choose anything from the range and feel confident that it is beneficial for their nutrient intake, knowing at the same time that their purchase has also had a positive impact on the environment.



Will you join us in changing the world one meal at a time?

Planet-friendly decisions creating a healthier population

To sustainably alleviate the quadruple burden of the Nutritional Paradox means creating change at every stage and every level of the food system. It is a mammoth task, and given its complexity, various stakeholders from the government, science, business and civil society will need to lead in partnership, creating actionable steps on both the national and global level.

Companies like ours will continue to believe in innovation and in creating products such as our proprietary instant noodle technology that take into account both the population's and the planet's health while adding economic value.

We will continue to work on changing the world, one meal at a time.

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'Branding for People Not Topics'

What public health nutrition can learn from commercial marketing

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Key messages

- > Commercial marketing is often based on segmentation by psychographics: first, understanding the drivers and values of specific target audiences, and then leveraging those insights to design messaging that is inherently appealing to specific audiences.
- > Public health authorities can make nutrition messaging more appealing by employing a similar psychographic segmentation and message design model.
- > When developing psychographic-based nutrition messaging, it is important to understand the varied functions that food serves in different people's lives. To be effective, nutrition messaging must be based in each audience segment's real-world scenarios and must offer advice that makes sense within their routines and realities.
- > Making messages SAVI: Specific, Acceptable, Viable and Impactful ensures message effectiveness.

While remarkable progress has been made globally to reduce rates of hunger and undernutrition during recent decades, malnutrition, in all its forms, continues to impact every country. Virtually all high-income countries are experiencing staggering rates of overweight/obesity, while in many low- and middle-income countries overweight/obesity exists side by side with undernutrition.^{1,2} Malnutrition is a systemic problem. Extensive research supports what we know intuitively – that a simplistic explanation of a 'lack of willpower' fails to account for obesity rates reaching one in eight adults globally, and over three times

that rate in the USA.^{1,3} Challenges such as lack of access, food insecurity, food environment and policies have created a breeding ground for both undernutrition and obesity that disproportionately affects vulnerable populations around the globe.^{4–7}

"A simplistic explanation of a 'lack of willpower' fails to account for obesity rates reaching one in eight adults globally"

These systemic issues are compounded by food companies that target the same vulnerable populations, inundating them with messages that promote unhealthy foods, such as sugary beverages, fast food and empty calorie snacks.^{8–12} To increase the appeal of these unhealthy choices, companies use sophisticated segmentation techniques that leverage information about people's motivations, lifestyles and social patterns.⁹ Consequently, vulnerable populations are not overweight because they want to be that way; they're overweight because in this landscape it is challenging to see another viable option.

Instead of providing realistic opportunities, traditional public health campaigns have too often focused on simply telling people they *should* be healthier. Doing so completely misses the mark; people already know they *should* change. What they don't know is *how* to change within the confines of their personal situations.

"People already know they *should* change. What they don't know is *how* to change."

Rescue Agency takes a different approach. Rescue is founded on the belief that all people *want* to be healthy; they simply

lack the specific knowledge and tools to take action. To provide a clear road map to healthy living, Rescue breaks down generic nutrition messages using its SAVI messaging approach (see **Box 1**). This approach ensures that our audiences do not shoulder the burden of figuring out how to make healthier nutritional choices by themselves.

BOX 1: Rescue Agency's SAVI messaging approach

Specific	Must include a specific example of what our audience can do to change their behavior
Acceptable	Must be acceptable within the cultural, familial and social contexts of our audience's lives
Viable	Must be possible within the constraints of our audience's available time, budget and skills
Impactful	If adopted, the message would cause a meaningful impact on the audience's nutrition

By definition, SAVI messages must be tailored to the audience. Different groups of individuals display, for example, variation in the skills they bring to the table, impacting viability. They have unique behavioral patterns and need to change their nutrition behaviors in different ways. Thus, it is not possible to find a single nutrition message that will work across all audiences. To ensure we are reaching audience members with messages that resonate, Rescue tailors creative materials to audience segments, identified through psychographic segmentation – a strategy that food companies rely on in commercial marketing (see **Box 2**).⁹

BOX 2: Overview of branding for people, not topics

Branding for people: the approach

- Form a deep understanding of the audience through psychographic segmentation
- Apply audience insights to develop tailored messages that are authentic and impactful
- Instead of delivering messages that tell audiences they *should* be healthier, deliver SAVI messages that show audiences *how* they can make realistic, impactful changes

Forming a deep audience understanding through psychographic segmentation

The process of psychographic segmentation, in which an audience is divided into distinct subgroups using values, attitudes, lifestyles or interests, benefits from a mixture of methodologies. At Rescue, we lead with rich, qualitative research, ensuring we have the opportunity to investigate participants' values, or other characteristics, that are most important to them. In-home ethnographic interviews are particularly useful, as the home often reveals critical behaviors and habits that participants often forget to tell researchers. This format allows researchers to directly observe participants' home food environment, while probing about the diverse and complex functions that different food choices serve. Researchers take notes and photos, recording not only which foods are present, but also the positioning and quality of the foods they see. For example, they document when boxes of sugary cereals are stored prominently on the top of the fridge, and note when lettuce is wilted and crammed in a fridge drawer.

Interviews are followed by focus groups that are stratified so that individuals with common motivations are grouped together. This allows participants, hypothesized to be in a common psychographic segment, to engage in discussions about their core values and barriers to healthy eating. Researchers then administer a larger-scale online survey to test theorized segments and estimate the size of each group.

Emerging value-based segments

Across low-income adult populations that Rescue has worked with, consistent commonalities and distinctions in core values have led to the identification of six core motivational drivers: Personal Ambition, Stability-Seekers, Caring for Others, Experiences and Sensation-Seeking, Seeking Knowledge and Learning, and Building a Respected Reputation. Of those, three segments make up the largest portion of the low-income

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'Caring for Others' media image, illustrating that being healthy can be a positive, family-centric experience

BOX 3: Real-world examples of those driven by Personal Ambition, Stability-Seekers and Caring for Others

Personal Ambition



Julia spends her days bouncing back and forth between her day job at a clothing store and evenings at beauty school. She views school as a stepping-stone towards her long-term plan of starting a natural beauty salon. She knows that she has a lot to figure out – between sourcing the products and running the business – but she is confident that she will get there. At night, she heads over to pick up her 3-year-old daughter from her mom's apartment. Between work, school, her business and being a single mom, there isn't a lot of time for much else, but she feels good knowing that she is working towards making a great life for herself and her daughter.

Stability-Seeker



James was born and raised in a small town, where he still lives with his wife and four small children. He loves the familiarity of his town and couldn't imagine ever leaving. A few years back, he and his family moved in with his parents so they could save for a house. While it was a tight fit, he feels that it was an important step to establishing security. When chatting about life in his town, he describes neighbors who like to go out in larger towns nearby on the weekends. He finds these activities frivolous. He much prefers to do what he and his family do every weekend: buy three US\$5 cheese pizzas and watch a movie at home. After all, it is what they always do, and James likes to think "If it's working, why change it?"

Caring for Others



Maria lives in a small house in an urban center with her four children, ranging in age from eight to 17. When she talks about how much she loves taking care of her children, she lights up and smiles brightly. She takes a two-hour bus ride to and from work each day, but always comes straight home from the bus stop, because her kids need her. Weekends center around her husband. Every Saturday morning she travels to see her husband, who was deported almost 10 years ago, so that she can clean and prepare his favorite meals. She loves supporting and being there for her family, and is truly happiest when making life a little bit easier for those around her.

© Photographs: Rescue Agency

populations that Rescue has worked with, and also have the highest rates of obesity: Personal Ambition, Stability-Seekers and Caring for Others.

Those driven by *Personal Ambition* are future-thinking and hardworking. They are high-energy individuals, often balancing work, relationships and school. They view their low-income status as temporary and believe they are working towards improving their lives and the lives of their loved ones.

Stability-Seekers strive to establish security for themselves and their loved ones. They find pleasure in routine, value tradition and generally like predictable outcomes. The third group, *Caring for Others*, takes personal responsibility for improving the wellbeing of others, particularly their kids, spouse and, if applicable, live-in-parent. They express a strong desire to make their family members happy by responding to, and anticipating, all their needs (see **Box 3**).



'Personal Ambition' Instagram post, emphasizing novel flavors that energize

Apply audience insights to develop tailored messages

Insights about the values and priorities of each psychographic segment obtained through the research process are used to tailor creative materials. Learnings about each segment are used to ensure that characters and situations reflect our audiences' core motivations, struggles and unique barriers, while promoting nutrition messages that are SAVI.

For example, for those driven by Personal Ambition, health should be framed as a path towards a successful, smart future. Messages should express how the ability to eat well and be fit isn't about putting in more time and energy; instead, it's about gaining an edge to achieving their goals. Characters should be

relatable, balancing multiple responsibilities and demonstrating the struggle of having limited time to achieve their goals. Those driven by Personal Ambition respond well to nutritional 'challenges' that leverage the audience's goal-oriented nature.

In contrast, messages that resonate with Stability-Seekers frame health as providing comfort and security. Stability-Seekers tend to connect with messages that emphasize how real health isn't about one-off fads; rather it's about using a step-by-step, moderate approach to change. Thus, messages should suggest incremental changes to traditional meals, using familiar ingredients. Characters should express the desire for security and the strong need to follow tradition. Stability-Seekers respond well to simple solutions, such as promoting the use of frozen produce. This alleviates their fears of produce spoiling and leans into Stability-Seekers' desire to be prepared 'just in case.'



Highly tailored digital experience during which participants report their beverage consumption habits, are educated about their personal sugar intake and are then guided through selecting lower-sugar alternatives



'Stability-Seekers' Facebook video post, emphasizing traditional flavors and familiar recipes

Finally, messages that connect with the Caring for Others segment position working towards health as a family, happy and together. Messages should communicate that healthy meals don't have to create conflict between parents and children, but can be a 'unifying' activity that benefits everyone. Characters should prioritize family and the desire to maximize quality family time. As this segment is highly concerned with ensuring meal options are well received by the entire family, messages should suggest fun, kid-friendly, kid-tested recipes.

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“Effective marketing communications go beyond just telling someone what they *should* do”

Conclusion

Effective marketing communications go beyond just telling someone what they *should* do. Effective marketing reflects the audience's reality, and shows that healthy nutrition can not only fit within their lives, but that it can improve their lives in ways that are important to them – for example, moving them closer to their goals, increasing their sense of security or showing their families how much they care. This is how we take on the burden of change.

At every step at Rescue, we seek to understand our audiences on a fundamental level, developing authentic, tailored messaging that supports positive behavior change. While this is just a single aspect of tackling the complex puzzle that is obesity prevention, it is a key first step in empowering people to improve their own lives.

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Highlighting Group Differences

Using segmentation to meet the needs of different types of people

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Key messages

- > Segmentation is a key social marketing principle.
- > Segmentation allows the wants, needs and characteristics of smaller groups within a larger target audience to be identified.
- > Segmentation offers additional insights about the groups that are most likely to change.
- > An example study outlines how two distinct segments were identified within one student population.
- > This segmentation analysis highlighted that it is essential to focus on making healthful eating opportunities more available – for example, ensuring the availability of food outlets offering healthy options and offering healthy breakfasts for students.

Introduction

Social marketing can change behaviors for the better. It has, for example, been used in healthy eating¹ and alcohol education.² Segmentation is a key marketing principle, and it is included in all widely recognized social marketing frameworks.^{3–6} The objective of segmentation is to divide a heterogeneous market into homogeneous consumer groups⁷ based on similarities. Segmentation then guides strategic planning and decision-making, ensuring we plan for as many different types of people as we can.⁸

Large multinational corporations recognize that we are all different. Companies such as Amazon and Netflix can cater to

our personal preferences. In most behavior change settings, this one-to-one focus is not always practical or feasible. The segmentation process is an excellent compromise, allowing differences within populations to be discovered and the emergence of insights that can assist us to reach more people.

“Segmentation can be used to discover unique needs, desires, wants and tendencies for different groups within a target population”

Segmentation discovers needs, desires, wants and tendencies among groups within a target population,^{5,9,10} and when we apply segmentation different responses to one program can be seen.^{2,11} The segmentation process follows three steps:

1. Finding homogeneous segments within a bigger heterogeneous group.
2. Assessing and choosing one or several segment(s) to target.
3. Developing a program, service or communication strategy matched to one or more target segment(s).¹²

Segmentation is effective.^{13,14} Segmentation delivers insights that facilitate understanding of the groups that are most likely to change, and applying segmentation means you can deliver programs, products and services that uniquely cater to different groups. By applying segmentation, different group interests are accommodated, which in turn delivers better outcomes.¹⁵

Segmentation discovers different groups of people using a range of measures. These might be demographic, psychographic and behavioral data (e.g., eating behavior), as well as geographic data. Let us take a look at an example of eating behavior. Here, demographic factors (describing ourselves), psychographic factors (describing how we think) and behavioral



Plate photograph to enumerate food selections demonstrating behavioral data



Plate photograph to enumerate food selections demonstrating behavioral data

factors (describing what we do) are applied in order to identify segments within one student population.

How do we identify segments?

Young adults studying at three universities in South East Queensland, Australia, were surveyed; full details of this study are available in our forthcoming paper.¹⁶ Participation in the

survey was voluntary and completely anonymous. Survey respondents were given an equal chance of winning one of five AUD\$50 gift vouchers. A sample of 475 young adults completed the survey. The sample consisted of high school educated (48.6 percent) women (77.1 percent). Most of the respondents were 21-year-olds (11.6 percent), followed by 20- and 23-year-olds (both 10.4 percent). Half of the sample (55.4 percent) reported always eating breakfast and nearly half (43.1 percent) reported always eating at least two portions (200 g) of vegetables on a daily basis and at least two portions (200 g) of fruit daily (43.1 percent).

The survey assessed food habits and eating behavior – specifically, breakfast intake, the number of meals consumed daily, the consumption of fruit and vegetables on a daily basis and the daily consumption of both alcohol and desserts.¹⁷ A four-point Likert scale with eight items was used to measure eating behavior according to four categories: never, sometimes, often and always. The answer options represented a score from zero to three; the lowest score was assigned to the least healthy option and the highest score to the healthiest option, generating an overall eating behavior score for each participant (zero being the lowest and 24 the highest possible score).¹⁷

The survey continued by assessing the motivation, opportunity and ability to eat healthily. Six items drawn from previous studies¹⁸ were used to measure motivation (health and weight control), and three items were used to measure opportunity (cooking fruit and vegetables) and three items measured ability (shopping for fruit and vegetables). Seven-point Likert scales were used to measure the participants' motivation, opportunity and ability to eat healthily, using the categories: never, rarely, occasionally, sometimes, frequently, usually and always. The final section of the survey comprised demographic questions.

Results

Two distinguishable segments (Breakfast Skippers and Weight Conscious) were identified from the sample, using two-step cluster analysis in IBM SPSS Statistics version 25. The seg-

TABLE 1: Summary of the two-step cluster analysis results

Segmentation variable	Importance	Breakfast Skippers <i>n</i> = 159 (48.6%)	Weight Conscious <i>n</i> = 168 (51.4%)	Significance*
Education	1.00	High school (100%)	Bachelor's degree (38.7%)	.000
Motivation	0.04	4.4 (1.4)	4.9 (1.2)	.002
Turconi ¹⁷ eating behavior score	0.03	15.9	16.9	.009
Ability	0.02	4.5 (1.5)	4.9 (1.5)	.024
Opportunity	0.02	4.3 (1.5)	4.7 (1.5)	.041

**P* < .001

TABLE 2: Segment profiling variables

	Total 100% n = 327	Breakfast Skippers n = 159 (48.6%)	Weight Conscious n = 168 (51.4%)	P
Education*				.000
High school		100%	0%	
Graduate certificate and above		0%	100%	
Age*				.000
20–24		77.7%	30.9%	
25–29		14.9%	40%	
30–35		7.4%	29.1%	
BMI*		24.3 (5.8)	26.9 (13.8)	.035
Motivation				
I eat what I eat ...				
... to maintain a balanced diet*		4.7 (1.9)	5.2 (1.7)	.014
... because it's healthy*		4.9 (1.4)	5.3 (1.4)	.026
... because I watch my weight*		3.7 (1.8)	4.2 (1.7)	.013
Ability				
... because I have the skills to shop for my own food*		5.0 (1.8)	5.4 (1.7)	.023
Turconi score				
You eat breakfast*		2.1 (1.0)	2.3 (0.9)	.044
You eat at least 200 g of vegetables*		2.1 (0.8)	2.3 (0.8)	.023
You drink at least 1–1.5 L of water*		2.1 (1.0)	2.4 (0.7)	.002
Opportunity				
I eat what I eat ...				
... because there are lots of different fruits and vegetables available*		4.4 (1.8)	4.9 (1.7)	.016

*Significant at the 0.05 level or less

ments were named based on the differences between profiling variables (Weight Conscious being motivated due to watching their weight, and Breakfast Skippers consuming breakfast less frequently). The segments are outlined in [Table 1](#).

Two segments were identified in this study. Segment 1 (Breakfast Skippers; 48.6 percent) was slightly smaller than Segment 2 (Weight Conscious; 51.4 percent). The results show that Breakfast Skippers consisted of respondents educated to high school level, whereas most of the Weight Conscious segment had achieved additional qualifications after leaving high school (38.7 percent). The respondents in the Weight Conscious segment possessed a stronger motivation to eat healthily ($M = 4.9$, $SD = 1.2$), had a stronger belief in their ability to eat healthily ($M = 4.9$, $SD = 1.5$), and they felt they had more opportunity ($M = 4.7$, $SD = 1.5$) to eat healthily compared with Breakfast Skippers. Breakfast Skippers reported a lower Turconi eating behavior score (15.9) indicating they had less healthful eating habits compared with Weight Conscious (16.9). The detailed results of the segments are presented in [Table 2](#).

“By applying segmentation, insights that can be used to change the eating behavior of different types of young adults can be obtained”

Discussion

By applying segmentation, insights that can be used to change the eating behavior of different types of young adults can be discovered. Two distinguishable segments (Breakfast Skippers and Weight Conscious) were discovered, and each had singular beliefs about what motivates them to eat more healthily, the different opportunities they have to eat healthily and their ability to make healthy food for themselves. This study demonstrates how segmentation can be applied to provide useful insights for social marketers working on improving the eating habits of young adults.



Communication used in the GO FOOD programs to emphasize the availability of healthy options

One or more social marketing interventions could be used to target the two segments. The factors motivating Weight Conscious to eat healthily in comparison with Breakfast Skippers are maintaining a balanced diet, a willingness to consume food that is healthy and being conscious of their weight. Weight Conscious also reported a higher ability to purchase their own food, better availability of fruit and vegetables and being more skillful compared with Breakfast Skippers. Consistently, Weight Conscious were also more likely to drink at least 1 L of water and eat two portions of vegetables on a daily basis in comparison to Breakfast Skippers.

In light of the results, the attitudes of Breakfast Skippers could be targeted by social marketing interventions to strengthen positive perceptions of buying and cooking healthy foods so as to increase healthful eating behavior. Interventions might benefit from reinforcing the beliefs of Breakfast Skippers about the enjoyability and benefits of healthful eating, especially as the levels of motivation, opportunity and ability and their Turconi eating behavior scores were lowest of the two segments. Promotional items such as a 1 L water bottle and ensuring that water fountains are provided are examples of strategies that can be applied to increase the amount of water consumed.

“Social marketing interventions can enhance environmental support for healthful eating”

Additionally, social marketing interventions can enhance environmental support for healthful eating along with the previously outlined individual approaches. Evidence showing the value of environmental support is available. Carins et al., for example, took advantage of environmental support by altering the food environment in a way that paying customers were able to choose more of the healthiest foods from the available options (making healthier alternatives more prominent),¹ whereas Sanigorski et al. created a program that sold healthy lunch (combo) packs in school cafeterias.¹⁹ Different segments can be engaged in healthful eating behavior by finding factors that reduce the barriers and make healthful eating easier and more enjoyable.

Increasing healthful eating opportunities on the university campus – for instance, ‘come and try free healthy breakfasts’ communications combined with discount vouchers to food outlets – would make healthful eating opportunities more accessible. Moreover, the number of healthy food outlets on campus should be increased by university management. Social marketers could also get local supermarkets involved with universities by negotiating a student discount on fruit and vegetables purchased through online delivery providers.

“University management should prioritize increasing the number of healthy food outlets on campus”

Conclusions

Segmentation in social marketing has proven to be an effective method to target messages to reach specific groups, and to meet the needs and wants of these groups in order to achieve attitude and behavior change. Two distinct segments were revealed in a young adult population in a healthful eating context, and suggestions on how to engage these segments in healthful eating programs were provided, emphasizing a focus on attitudes towards healthful eating and reinforcing the beliefs that healthful eating is enjoyable. The role of environmental support in encouraging healthful eating was also noted by making it easier to select healthful options.

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Nudging the Next Billion

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Key messages

- > Wants and not needs should drive the next billion users (NBU) outreach strategy.
- > We should focus more on the communication rather than the data angle when seeking mobile platform optimization for the healthcare industry.
- > Moral judgement around sex and sexuality needs to be sidelined if we wish to genuinely meet the healthcare demands of the NBU market.
- > All-purpose apps may be more popular for communicating healthcare information than specialized apps designed for health.
- > We should focus on self-care more than on prevention and treatments in order to engage the teen groups among the NBU.
- > We need to cater to a diversity of consumers in the system beyond the middle-class, young white male norm.
- > The NBU market are not second-class consumers who will accept second-hand products: they are demanding, sophisticated consumers who are desperately seeking quality digital products and services.

On 9 May 2019 at the KIT Royal Tropical Institute in Amsterdam, the Financial Times (FT) brought together leading experts including government ministers, health insurers, fintech startups, transnational donors, healthcare companies and NGOs to push the conversation on the 'Future of Health Coverage.' Her Majesty Queen Máxima of the Netherlands, in her position as the United Nations Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA), gave the opening speech. She called for the leveraging of mobile tech to advance universal healthcare for all.



Audience at the FT Future of Health Coverage event, 9 May 2019, KIT Royal Tropical Institute, Amsterdam

“The lower socioeconomic classes have fast come online”

People in low-income countries were the targeted healthcare consumers. This is no coincidence. More than a billion of the world's population are young and about 90 percent of them live outside the West.¹ Following the recent radical price reductions in mobile phones and data plans and diverse digital payment options, the lower socioeconomic classes have fast come online. There are more cell phones than people in several countries including in Namibia, China and India. By 2020, the majority of mobile data will emerge from developing countries. Only two of the top 10 countries with the most Facebook users are from the West – namely, the USA and the UK.² Among Saudi Arabia's population, 73 percent are active users of WhatsApp, the highest user rate in the world.³

It is no wonder that the healthcare industry is betting hard on the next generation of mobile health apps for these next billion users – the 'NBU' market. Mobile health has drawn investments of about US\$30 billion during the past decade and stimulated a host of novel public-private partnerships.⁴ There is hope that these platforms will become efficient and effective delivery mechanisms for healthcare, connecting patients with providers. Innovative mobile payment options promise to resolve the long-standing barrier of access to capital for healthcare. However, as this market matures, what we find is a graveyard of inactive and unused mobile health apps.⁵

“The NBU demographic has long been a preoccupation of aid agencies and governments but not the market”

The fact is that the success rate of any startup app is 0.01 percent – basically, 1 in 10,000 applications will make it in the market.⁶ The miscalculation of who your consumers are and what they want is an important factor in this equation. Neglecting the diversity of consumers in the system contributes to this misalignment. Over 80 percent of clinical trial participants are white, and many are young and male.⁶ Moreover, the NBU demographic has long been a preoccupation of aid agencies and governments but not the market. Decades of preconceptions about these users as instrumental and utility-driven have led to the derailing of our understanding of their actual mobile usage and motivations for getting and staying online.

If we are to design future media strategies to nudge these next billion users towards positive healthcare behaviors, we need to reexamine our starting points.

Wants, not needs

Given the target market at the Financial Times event, I was invited to give a talk on my new book, *The Next Billion Users*, with Harvard Press.⁷ My talk was part of the panel on ‘The Value of Data for Health.’ A number of questions dictated the agenda of the panel: How important are mobile tech and data to develop or maintain a viable inclusive health infrastructure? What are the challenges and responsibilities of data ownership in terms of privacy, protection, property rights and value creation – and solidarity/risk sharing? Who has the capabilities and can be

trusted to manage the valuable assets that health data constitute – in the interest of society? What lessons can we learn from front-runner countries in the application of big-data analytics in health financing and delivery?

“The user continues to be lost in the conversation”

While these are all essential questions on healthcare information infrastructures, the user continues to be lost in the conversation. The fact is that when we speak of mobile platform optimization for the healthcare industry, we focus more on the data and not as much on the communication angle of this endeavor. This is even more evident in healthcare strategies for developing countries, which are designed to cater to what people presumably need versus what they expressively want. This practice stems from a long legacy of development work that approached nation building from a top-down and paternalistic viewpoint.

A classic example is the approach towards sexuality in healthcare in developing countries. Much money and attention continue to go towards agendas such as population control and family planning.⁸ The need to ‘contain’ the demographic growth of low-income people has historically been an implicit driver in shaping strategies towards these populations. This has led to many cruel and inhumane practices, such as forced sterilization in India during the 1970s and the one-child policy in China during the 1980s, and also the continuing damage that US abstinence policies dating from the 1980s inflict on countries in Africa.⁹

The focus on sexuality usually causes a moral panic when pertaining to the world’s poor. The media has long associated sex in developing countries with HIV/AIDS, poverty, population growth, female genital mutilation and rape. This propels the healthcare industry to produce health information and design applications that they believe these populations ‘need’ based on this long-standing profile. Aid agencies continue to frame them as beneficiaries and patients rather than consumers with distinct demands beyond these narrow confines.

The fact is that many of these next billion users are typical young teenagers who are curious and desperate to have romantic encounters. They are at a critical stage in their youth development: they want to discover their sexual preferences, learn about sex and experience romance. WhatsApp and Facebook have given them a rare opportunity to fulfill these desires as they go about friending strangers and building romantic relationships with them.¹⁰ Online platforms become an important outlet for these youths to learn about sexuality, especially given



Payal Arora (left) speaking about her new book, *The Next Billion Users*, at the FT Future of Health Coverage event in Amsterdam, 9 May 2019

© Victor Lacken

that many of these users live in conservative societies where arranged marriages are the norm and dating is forbidden. Porn-hub becomes the main tutor on sexual preferences and behaviors. For instance, in India, most parents believe that children are using their mobile internet for education; however, the fact is that India ranks third in the list of countries that consume the most pornography.¹¹

The NBU adult consumer faces a different kind of challenge: one that is contrary to the family planning agendas promoted by aid agencies, governments and the media industry. Many of them are struggling with infertility, which often has a devastating impact on their lives and those around them.¹² Strong cultural norms pressure them to be parents. Childless people suffer deep stigmatization, leading to divorce, abandonment, depression, grief, domestic violence and disrespect. In low-income countries, children are the only form of social insurance, meaning these childless populations are even more vulnerable as they grow older. People mistakenly believe that infertility is the same as sexual impotence, exacerbating this situation. So, while the healthcare industry neglects this high demand, entrepreneurial shamans promise cures and scammers advertise fake infertility treatment purchases on Facebook and 'solutions' circulate behind the encrypted walls of WhatsApp.

Basics won't bite

Facebook has learnt the hard way to engage the NBU base. It was ahead of the curve in recognizing this demographic as legitimate digital consumers. In the name of altruism, Facebook moved into uncharted territory to capture this 'wild, wild south.' In 2010, it launched 'Facebook Zero,' an initiative in collaboration with telecom companies that allowed them to waive data charges (zero-rate) and offer a stripped-down text-only version of its mobile website. Universal basic internet service is possible, Mark Zuckerberg wrote, but "it isn't going to happen by itself."¹³ Its first-mover advantage with the NBU market in Africa, Latin America and Asia translated to most of these consumers equating Facebook with the internet. Along the way, this has gained some serious pushback.

What Facebook got very wrong was its assumption that people with limited resources would have limited demands and aspirations. Without pictures, Facebook Zero did not engage these consumers. Moreover, the users' poor literacy skills demanded a primarily audiovisual experience of the internet. Facebook Zero's latest rebranding, 'Free Basics,' is now too late in the game of treating these consumers as they should be treated – as demanding and sophisticated consumers. The rise of the Indian Reliance Jio mobile platform during late 2015 was a game-changer as it put the NBU market at the center of its innovation and business plan.

Data prices fell by 90 percent in 2016 as a result of its launch. It publicizes its mobile services as a one-stop-shop platform for these users to fulfill all their desires. Their strategy builds on the fact that many of these users are now accustomed to a context collapse of digital space, given that Facebook and WhatsApp both essentially serve as LinkedIn, Tinder and Amazon rolled into one. The odds are that within the encrypted worlds of entertainment, gaming and socializing, healthcare content will circulate, blurring boundaries and sources.

“The fact is that the internet is the prime leisure economy for the world's poor”

From the onset, Jio rode on the ABCD marketing principle based on what kind of content people mainly consume when they have access to data – Astrology, Bollywood, Cricket and Devotion. The fact is that the internet is the prime leisure economy for the world's poor. As they struggle with their everyday lives, they use this space to be entertained, engaged and informed. In 2019, KPMG released a report that reaffirmed this stance.¹⁴ Indians have adopted online video consumption as a prominent media consumption habit. More astoundingly, the lowest socioeconomic classes in India spent a significantly higher share of their data on mobile video consumption than any other class.

To nudge these users towards health messages, products and services, we need to recognize that the industry needs to go where these users actually hang out. The average healthcare consumer in the West has a history of communication experiences with healthcare institutions, and mobile health (mHealth) apps build upon this learnt behavior. However, much of the NBU populace have limited exposure to interactivity with healthcare beyond serving as guinea pigs for the vast piloting of mhealth initiatives that disappear as fast as they begin. This 'pilotitis' of aid agency efforts has resulted in a cynical and fatigued consumer group who are ready to be treated as a legitimate and active user group.¹⁵

They refuse to be second-class consumers with watered-down versions of mobile applications. They are not mere bodies to be data-mined. After all, they spend a higher percentage of their limited income on these mobile apps compared with their middle-class counterparts.¹⁶ They want content that will entertain while it informs, and safe spaces that will help them explore topics that are taboo in their societies. They have learnt to tune out condescending messages. They also deeply desire to be part of a global public, and consider themselves as global citizens, even if many of them may never step outside their locality.



FT Future of Health Coverage event kickoff, KIT Royal Tropical Institute, Amsterdam

“The NBU populace consider themselves as global citizens”

They actively seek to connect with strangers around the world, to engage on global health topics and to be exposed to all kinds of products and services that are often beyond their reach. Many of them, being teens, are eager to curate their identities around group affiliations and popular culture. Given their life stage, they are more likely to be drawn towards self-care-oriented mHealth content than more traditional mhealth content on prevention and treatments. Self-care mobile apps are topping the charts as some of the most popular apps among millennials who are obsessed with themselves and their lives.¹⁷ Yet, few health apps cater to the NBU market in this domain.

After almost a decade of such experimentation, the traditional mindset towards the NBU market still persists – that somehow they want practical, functional and utility-oriented products over all else. Nokia recently announced its new feature phone that will give 4G networks to low-income communities in the developing world. While this is typical of good intent, it has continued with the mindset that these users do not care about design or rather cannot afford to care. At first glance, the device appears as “an utterly unremarkable feature phone.”¹⁸ The company hopes that in spite of this, the NBU market will embrace the phone as they desperately yearn to partake in the world of the internet.

There is a good chance that the phone will not be popular as it undermines another fundamental motivation for mobile uptake – social status. The poor have always partaken in conspicuous consumption as social capital builds on how you portray yourself.¹⁹ These aspirational signals allow for socioeconomic mobility. Design matters!

To nudge the next billion consumers, let us first nudge ourselves in the right direction – by acknowledging that these users want what we want, and more.

“These users want what we want, and more”

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Social Marketing to Sustainably Influence Nutrition Behaviors

Nutri'zaza's strategy for triggering adequate consumption of complementary foods to prevent malnutrition in Madagascar

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Key messages

- > The bottom-up creation of a social offering improves its chances of success.
- > Focusing on consumer satisfaction and convenience, while at the same time respecting local food habits, is more effective than simply communicating a health promise.
- > Developing innovative distribution networks to increase the availability of products close to the poorest families is key.
- > Social marketing makes it possible to reach vulnerable populations.

Madagascar, a vulnerable and challenging environment¹

Every year, 9 million children worldwide die before the age of five. Directly or indirectly, one out of every two of these deaths is due to malnutrition. Malnutrition is especially devastating during the first 1,000 days of life, from an infant's conception to its second birthday. Even when it does not kill, malnutrition causes irreversible damage that lasts into adulthood (high morbidity, physical

and mental disabilities). This damage is passed on from one generation to the next, and has serious consequences for development. Malnutrition during this period is partly caused by the inadequate intake of nutritionally appropriate foods that are complementary to breast milk, and it can lead to food-borne diseases (diarrhea, parasitic infections) and/or the reduced bioavailability of micronutrients. The timely use of appropriate complementary foods and/or food supplements is generally recognized as a necessary prerequisite for preventing malnutrition. However, encouraging mothers to buy or prepare appropriate food products at the appropriate time is a challenge that has often been addressed without major success in developing countries.

“The manufactured complementary food products available on the market are generally of poor quality or else unaffordable, and 80 percent of urban Malagasy families live on less than US\$1.90 a day”

In Madagascar, 47.8 percent of children under 5 years suffer from chronic malnutrition (and up to 60 percent in some poor urban areas), which equates to more than 900,000 children. Feeding practices do not meet their needs, and the manufactured complementary food products available on the market are generally of poor quality or else unaffordable, and 80 percent of urban Malagasy families live on less than US\$1.90 a day.

How can this public health issue be addressed in a sustainable manner? Nutri'zaza's ambition is to ensure affordable and quality complementary foods for children aged 6–24 months are available to vulnerable populations with low purchasing power, and thereby to sustainably improve the consumption of adequate food and ultimately to help prevent malnutrition in infants and young children (**Box 1**).

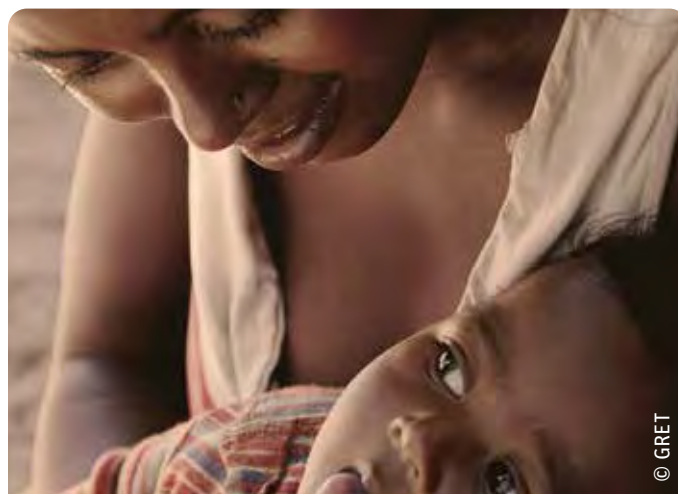
BOX 1: Nutri'zaza: a Malagasy social business in the nutrition sector

Nutri'zaza is a social business that was set up in 2013 to build on the results of 14 years of nutrition projects led by GRET (a French development nongovernment organization) with its partners (IRD, Antananarivo University, TAF and Malagasy institutional stakeholders). Its aim is to improve infant feeding practices in poor neighborhoods in urban areas of Madagascar.^{1,2}

Consumer insights drive social marketing approach

To build an appropriate social marketing strategy with a high qualitative value proposition, consumer knowledge is key. Nutri'zaza regularly performs in-depth quantitative and qualitative diagnoses and analyses of consumer insights, including the global aspirations and needs of consumers, so as to develop a better offering in the long run. In Madagascar, the main findings of this work helped Nutri'zaza inform the development of a coherent strategy.^{1,3,4}

- > **Nutrition knowledge:** More than 90 percent of mothers are convinced as to the importance of food diversification. However, almost 50 percent of them declared that this is difficult to achieve in practice (because of limited time, the



A Malagasy mother and child participating in a nutrition education session, in Antananarivo, the capital of Madagascar

low nutrient content of homemade food, the low all-year-round availability of some necessary types of food and the lack of budget to buy appropriate ingredients). Only one in every three mothers has a good knowledge of fortified foods.

- > **Food practices and cultural perception of food:** Complementary food given to children – the traditional meal 'Vary sosoa' – is mainly composed of rice and water, and is of very low nutritional quality. Although nutritionally poor, rice is the star product in the perception of Malagasy, and in all respects: that of culture (rice is a staple food consumed daily); that of identity (in Malagasy, 'to eat rice' means simply 'to eat'); and that of nutrition (rice is considered as the perfect food that meets all dietary needs). Few people can afford to cook rice three times a day (because of lack of time or budget), so they prefer to buy out-of-home, ready-

TABLE 1: Local needs identified and expectations expressed

Local needs identified	Expectations expressed
Inadequate feeding practices from 6 months ('Vary sosoa')	Feeding and practices adapted to the nutritional needs of children aged 6–24 months
Low knowledge of infant and young child feeding	Knowledge of how to feed children better
Constraints in preparing meals with unprocessed raw material	Meals that are easy and quick to prepare and/or ready to eat
Poor sanitary conditions (especially water quality)	Ready-to-cook product
Time-consuming preparation for mothers and caregivers	Recipes adapted to the local food habits and constraints (with emphasis on the presence of rice and local flavors/tastes)
Insufficient financial means	Meals that are affordable for the majority of those sections of the Malagasy population who have low purchasing power
Difficulty accessing healthy food, especially in poor areas of urban cities	High-quality local product accessible near residential areas, and high proximity to consumers



A Malagasy child consuming a local porridge, in Antananarivo

to-eat rice donuts or tea for their children. Eighty percent of children aged 6–24 months do not reach the acceptable minimum food intake, and only 28 percent receive the minimum number of recommended meals per day (according to WHO standards).

- > **Habits and purchasing behavior:** Parents generally buy food products on a daily basis in small grocery stores and in very small quantities. Consumption away from the home is common, especially because of the cost of preparing food at home. More than 80 percent of the population living in urban areas have a daily food budget of MGA200–500 per child per day (US\$0.06–0.13).
- > **Needs and expectations:** According to Malagasy mothers, the ‘perfect food’ has to be safe, accessible in terms of price, available close to home, composed of local ingredients (especially rice), quick and easy to prepare, adapted to local food tastes, in line with nutritional requirements for the child’s growth (at



A flyer for the Koba Aina product range

least in terms of vitamin content) and easy to digest. Above all, Malagasy mothers want to please their children with the best food they can afford, not the cheapest (Table 1).

“Malagasy mothers want to give their child the best food they can afford, not the cheapest product on the market”

Nutri’zaza’s value creation and social offering

To address these contextual issues, Nutri’zaza, with the technical support of GRET NGO and its partners, developed an innovative strategy to manufacture locally available, easy-to-use fortified products and to market them to low-income families with young children, while at the same time raising awareness of good feeding practices.

One key driver forms the basis of Nutri’zaza’s social marketing strategy: focusing on consumer satisfaction and convenience while meeting local food habits (Box 2). This strategic orientation is more effective than simply communicating a health promise.^{1,2,5}

The product offered, *Koba Aina* (‘flour of life’ in Malagasy), is a ready-to-cook flour made from corn, soy, rice, sugar and peanuts, and fortified with 25 vitamins and minerals. It is used in the preparation of porridge and is similar to the traditional local rice flour. It is a complete infant flour (1 sachet = 1 meal) and is locally produced by TAF mainly from local raw materials (90 percent). *Koba Aina* is adapted to suit the nutritional requirements of infants and young children aged 6–24 months in addition to breast milk. It is also adapted to the eating habits of the local population, compliant with international quality standards and affordable for low-income populations. The consumption of one serving per day in place of one traditional meal, combined with the rest of the diet (including breast milk), covers the total daily recommended nutritional intake for children aged 6–24 months.

“The innovation lies also in the associated service that is offered to consumers with a view to achieving better compliance”

The innovation lies also in the associated service that is offered to consumers with a view to achieving better compliance. The product is available in two different formats (as ready-to-eat



A restaurant for babies in a poor urban area of Antananarivo

BOX 2: The social marketing mix

Product: *Koba Aina* fortified product (see above, 'social offering')

- > *Koba Aina* is a ready-to-cook flour fortified with 25 vitamins and minerals, which is used in the preparation of porridge.
- > It is compliant with international quality standards and local habits and tastes.
- > It is sold in three formats: unpackaged (as ready-to-eat porridge), in a one-portion-size 35 g sachet and in 1–50 kg bulk packaging.
- > The 35 g sachet comes in three flavors: natural, strawberry and banana.
- > The mascot – a bag of rice from Madagascar with a smiley face – highlights the values of the brand (quality, nutrition, local identity). The name *Koba Aina* ('flour of life'), the slogan ("I love my child, I give him *Koba Aina*") and all other communication messages have been chosen to reflect mothers' perceptions and expectations regarding infant food.

Place: three distribution channels facilitate the sale of the product in urban zones across Madagascar (Nutri'zaza):

- > The social market: 123 sales agents (well known to the community) sell the ready-to-eat porridge in urban zones as door-to-door ambulant vendors or through *Hotelin-jazakely* ('restaurants for babies'). Parents can also come to buy the porridge already prepared or instead can let their children eat it in the restaurant. This option (33 percent of sales volumes as at December 2018) also provides an opportunity for parents to monitor the baby's growth and to obtain advice.

- > The traditional market: around 8,000 retail outlets, including small and medium-size grocery stores, pharmacies and supermarkets, sell the 35 g sachet. Fifteen wholesalers also flood the market (accounting for 46 percent of sales volumes as at December 2018).
- > The institutional market, via NGOs and public institutions. Unbranded *Koba Aina* is sold to social institutions in order to reach populations in the E category (people living on less than US\$0.19 a day) by them offering free or subsidized products (accounting for 21 percent of sales volumes as at December 2018).

Price: unsubsidized to end consumers

- > Through the social network (restaurants for babies and door-to-door): MGA300 for one ladle/meal = €0.075.
- > Through the traditional network (retail): MGA500 per 35 g small sachet (one-portion pack/meal) = €0.125.
- > Through the institutional network (public organizations): free for the end consumers, and sold to the institutions at a lower price than via the other channels.

Promotion:

- > Media: advertising spots on TV and radio, sponsoring, documentaries, game contests online, national fairs.
- > Below-the-line marketing: sales agents in the neighborhoods (as the main communication vector), events on local markets (mobile animation) or with retailers and wholesalers, trade animators in regions, goodies.
- > **The message is not based on 'the cheapest solution for the poor.' Communication focuses on the fact that this is a local solution made from rice, and that it is convenient, available near your place, tastes good, of high quality and affordable. Its emphasis is on the pleasure given to the child, and the main aspiration is: "I love my child, I give him *Koba Aina*!"**

porridge served by the ladle and also as a 35 g sachet of flour), and is distributed in various ways:

- > via the traditional network comprising more than 8,000 direct sales outlets and wholesalers;
- > via a genuinely innovative social network, the 36 *Hotelin-jazakely* ('restaurants for babies');
- > via a door-to-door service at the heart of 123 neighborhoods in Madagascar; and

- via the institutional network of public organizations conducting nutrition projects.

In parallel with the intensive commercial promotion, families receive appropriate messages from public actors on infant and young child feeding through a complete behavior change communication strategy focusing on complementary feeding and developed in line with government nutrition policies. This choice of combining both actions (social marketing run by Nutri'zaza and nutrition education run by public actors) is mainly driven by the very specific category of product being addressed (complementary foods for children aged 6–24 months). Indeed, following the WHO's International Code of Marketing of Breast-milk Substitutes and the recent resolutions of the World Health Assembly (May 2016), a private company cannot communicate nutrition education messages to this specific target group.^{6,7} This combination is essential to ensure the consumption of *Koba Aina* becomes part of a set of adequate food practices to prevent malnutrition among children.

Key learnings

Based on Nutri'zaza's experience, the social marketing of locally manufactured complementary foods appears to be a solution to provide quality and affordable foods that are fast and easy to prepare to as many people as possible. When accompanied by a complete behavior change communication strategy that increases awareness of appropriate feeding practices, social marketing

traditional network reach families from the C to B categories, even when some of them live in neighborhoods where they could purchase ready-to-eat porridge delivered at home.

- The brand awareness rate reaches the extremely high level of 90 percent in and around areas with restaurants for babies.



Nutri'zaza selling agent of *Koba Aina*, in Antananarivo

enables the appropriate consumption of the product in combination with other recommended practices and effectively improves nutritional impact.

Koba Aina is the only complete flour that is produced in Madagascar from 90 percent of local raw materials and is also specifically adapted to prevent malnutrition according to WHO standards among the crucial target group of children aged 6–24 months. It is two to four times less expensive than other industrial products available on the market and its price represents 4–8 percent of the budget of a family receiving a national minimum salary. Finally, *Koba Aina* is the only high-quality product sold in a convenient ready-to-eat format either via the door-to-door service or at the brand-dedicated baby restaurants.

Key figures show the current impact of Nutri'zaza's social marketing strategy (See **Box 3**).

BOX 3: Nutri'zaza's social marketing strategy in numbers

- More than 47 million meals of *Koba Aina* have been sold since 2013, which means more than 8,000 children under 5 are reached daily.
- 600,000 families have access to *Koba Aina* near their home (all points of sales combined). More than 120 neighborhoods are currently covered by the door-to-door service in 45 districts, among which 36 restaurants for babies are operational and more than 8,000 direct sales outlets are active.
- The monthly penetration rate, which is defined as the rate of children aged 6–24 months consuming at least one serving of *Koba Aina* (120 g of porridge made from 35 g of flour) per month, is around 62 percent (as at the end of 2017).
- Low-income consumers (from the D category) buy the ready-to-eat porridge that is sold door-to-door using a ladle.
- The 35 g small sachets that are available in the

Several lessons learnt can be shared as global recommendations:^{1,2,4,8–10}

1. Using social marketing to introduce a new adequate complementary food, in combination with a behavior change communication strategy focusing on relevant infant and young child feeding behaviors, influences more sustainable nutrition behaviors and triggers the adequate consumption of food.

2. Social marketing enables poor populations to be reached: the affordability of a high-quality product can be proven among C and D customers who are ready to pay more to get adequate food for their child if the product is perfectly adapted to their needs (in terms of the format of the selling units, content and distribution).
3. The bottom-up creation of a social offering improves the chances of success: in-depth diagnosis and regular analysis of the context, acceptability among the population and distribution network enable a better offering to be developed.
4. Offering a real-value proposition focusing on satisfaction (i.e., for the child), convenience and immediate emotional benefit (i.e., for the mother), while also meeting local food habits, leads to better adoption of the product by the target group than if only a health promise is made. "Mothers want to give their child the best food they can afford, not the cheapest product on the market."
5. Developing innovative distribution networks to increase the reputation and availability of products very close to the poorest families is key: a door-to-door service facilitates the use of a product in a context where many families do not have the facilities to prepare homemade meals and where some meals are usually eaten at home.
6. Developing a premium range (35 g small sachet) in parallel with a low-price product (porridge ladle) increases trust and the reputation of the product, triggers demand and ensures the product becomes aspirational for all target groups.
7. Combining research and action over a sufficiently long time span is key to find suitable and innovative solutions for each context and target group. Continuous monitoring and evaluation are also essential to ensure that the offering is still adapted to the context and that the messages are still in line with the target group and legal context.

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Social & Behavior Change

Nutrition programs are meaningful only to the degree that they help people *do something differently*. That is where social and behavior change (SBC) methods can help. In our experience, we have seen program planners miss opportunities to achieve much bigger and more lasting impact of their SBC work. The nine tips we offer here show you what you can do at each stage of a program cycle to avoid missing such great opportunities and to contribute to real, positive changes in people's lives.

PROJECT DESIGN

Focus on promoting a limited number of the most impactful and feasible practices, ideally at a large scale. This approach will allow your team to gain a deeper understanding of the promoted behaviors, and the target audiences will not feel overwhelmed by being asked to change too many things in their lives. Explore the tips provided in chapter 3.3 of GIZ's SBC Guide.¹

Go beyond raising awareness. Lack of knowledge is often not the key barrier to change – just think of all the things that you know perfectly well that you should be doing, such as exercising or going to a dentist. In your programming, do your best to understand and tackle the real barriers to, and motivators for, change. The useful guidance and tools at www.behaviourchange.net and People in Need's Behavior Change Toolkit can help you do so.²

Involve the key influencers who shape mothers' practices – for example, the fathers, grandmothers or more progressive peers. Without their support, mothers may not have the time, resources, courage or decision-making power to follow the nutrition practices your program promotes. See examples in Alive & Thrive's 'Dads can do that!' innovation brief.³

EVALUATION

Understand why a program (has not) worked, not only whether it met its indicators. Designing your monitoring and evaluation system (including the final evaluation) in a way that allows you to understand why the results were (not) achieved is often even more valuable than the results themselves. Such insight allows people and organizations to learn and to further improve the impact of their work.

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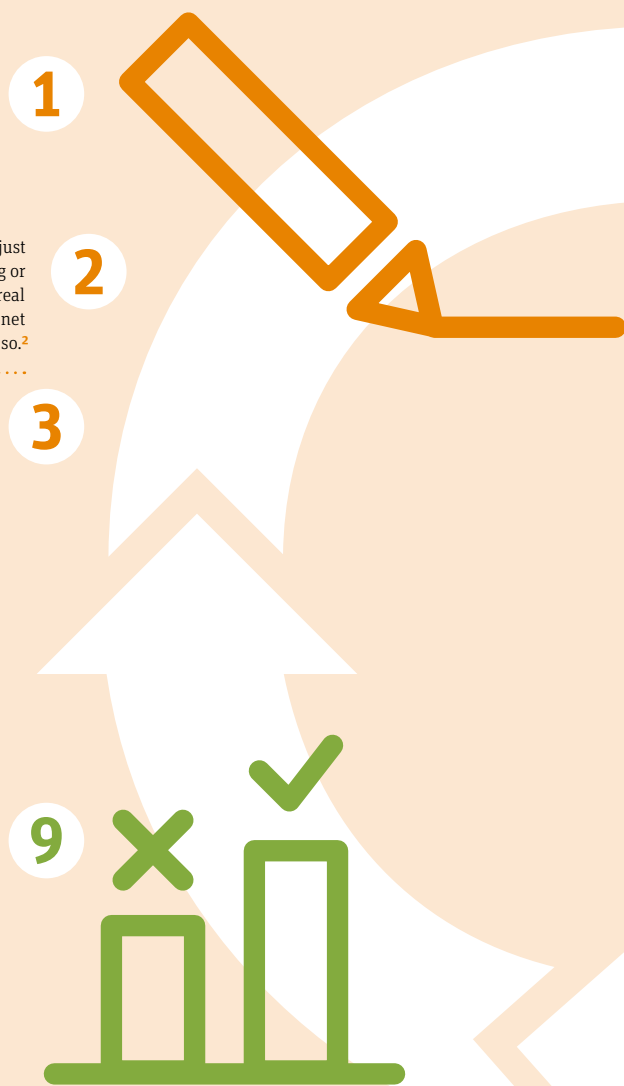
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in Nutrition: What Works?

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PROJECT INCEPTION

4

Use your baseline quantitative data to refine the focus of your activities. The data can help you choose which behaviors to promote (e.g., by knowing how many people practice them now) and the focus of your activities (e.g., by understanding people's level of knowledge and attitudes towards the promoted behaviors). Take advantage of the guidance available at www.indikit.net.

5

Break complex behaviors into small doable actions. Let's take an example. Complementary feeding is complicated: Which foods? How much? How frequently? At what age? Success will be more likely if you select just a couple of specific actions. Rather than asking mums to "Feed a variety of foods," suggest a more specific action such as "Feed your child milk and eggs every day." The video 'Choosing the Small Doable Action' provides great inspiration.⁴

6

Engage people's emotions. Decisions about what to do are more often based on the emotional self than the rational mind. In Peru, when nurses added the message "Teach your child to eat with love, patience and good humor," the mothers smiled, likely making them more open to the 'instructional' messages.⁵ To learn more, enjoy this video, 'The Elephant, the Rider and the Path – A Tale of Behavior Change.'⁶



IMPLEMENTATION AND MONITORING

7

Use real-time data to monitor the quality and progress of implemented activities. For example, People in Need's frontline staff used smartphone-based checklists to monitor the quality of SBC activities and the key gaps in the adoption of promoted practices. The data was automatically analyzed and used to adjust the project strategy.⁷

8

Employ multiple contact points, such as face-to-face interactions, community discussions, radio shows and cooking demonstrations. Alive & Thrive's research showed that the number of communication channels matter: in Ethiopia, only 16% of women who were exposed to one type of communication activity fed a child an egg, as opposed to 50% of women who were exposed to five or more activities.⁸

The Global Alliance for Social and Behaviour Change

A new movement for building informed and engaged societies

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Key messages

- > There is a need to: demonstrate the impact of social and behavior change (SBC), showcase best practices, encourage adaptation based on lessons learned, and support advocacy for policy change and funding in a consistent way to drive the use of evidence-based approaches and improve the wellbeing of many.
- > The Global Alliance for Social and Behaviour Change (the Global Alliance) has a unified commitment to and for people-centered development through the use of evidence-based SBC approaches to improve Sustainable Development Goal (SDG) outcomes related to gender, health, environment and education, among others.
- > Although still nascent, the Global Alliance has begun to gather compelling research findings highlighting the impact of people-centered strategies on the SDGs throughout the world.
- > The Global Alliance's structure includes three clusters that drive the entity's work: Evidence for Impact, Coordination–Infrastructure and Policy Engagement.
- > Strategies endorsed by the Global Alliance are important

and necessary to inform people-centered development initiatives that are driven by social change and behavior change.

The need to shift norms and change behaviors

Development challenges demand solutions that shift norms, change behaviors and amplify the voices of those who have the most at stake. Evidence-based SBC approaches offer solutions to these challenges. Yet, many who work in development have limited or no access to, or understanding of, the existing body of evidence in SBC, especially in sectors other than health. Furthermore, we often do not use the same terminology to communicate these evidence-based approaches, our program design and implementation, and later our findings. We also do not always share or publish our work in a way that could drive learning and knowledge at local, national and international levels.

In recent years, it has become clear that we need an entity that can help to demonstrate the impact of SBC, showcase best practices, encourage adaptation based on lessons learned, and support advocacy for policy change and funding to drive the use of evidence-based approaches to SBC that can improve the wellbeing of many. This entity – the Global Alliance for Social and Behaviour Change: Building Informed and Engaged Societies (the Global Alliance)¹ – was founded in 2018. It is a coalition of organizations² representing a range of fields and technical areas that support the SDGs. Its core work is based on the people side of development, including empowerment, inclusiveness and equality. It reflects a unified commitment to and for people-centered development through the use of evidence-based SBC approaches to improve SDG outcomes in relation to gender, health, environment and education, among others.



“The Global Alliance reflects a unified commitment to and for people-centered development”

Focusing on the people who are central to development progress

For local, national and international development to become more principled, effective and sustainable, a movement is needed that allows people, from all walks of life, to work with equal standing, take action and make decisions on SDG priorities in their own context and based on evidence. The Global Alliance is this movement. The Global Alliance focuses on the people who are central to development progress but also invests in processes that engage and support the people affected by development at the local, national and international levels. People-centered development initiatives that are driven by SBC inform and engage societies' work. Product development (e.g., drugs, water technologies), macro-policies (e.g., economic, land reform) and other major development priorities are of course important. However, the strategies endorsed by the Global Alliance, such as community engagement and action; media development; entertainment-education; social marketing; behavioral economics; social justice; public and private dialogue and debate; information and knowledge development and sharing; communication for development; culturally driven action; and policy debate, are also important and necessary.

Although still nascent, the Global Alliance has made great strides in its first 2 years. In its newfound role, it has begun to gather compelling research findings highlighting the impact of people-centered strategies on SDGs throughout the world. Findings showed that strategies such as community dialogues and mobilization, television and radio programming and discussions, early childhood education, economic empowerment, intensified interpersonal counseling, and participatory processes can have a sustainable impact on individual behaviors, community norms and empowerment across diverse geographical settings, societal levels and issues. Many of these strategies take place on a very significant scale, in common with most actions driven by social change, behavior change, and informed and engaged societies' initiatives.

“The Global Alliance is working to produce an SBC code of ethics”

The Global Alliance is also working to produce an SBC code of ethics to guide organizations across the private, nonprofit and intergovernmental sectors in setting ethical expectations and practices. The Global Alliance also recently hosted Social and Behaviour Change & Climate Action on 23 September 2019; the aim of the event was to examine how SBC can build greater consensus to enable meaningful shifts in attitudes, norms and behaviors related to climate action. We discussed what lessons can be learned from initiatives to communicate climate science, climate policies, climate risks and climate impacts.

Most recently, at the International SBCC Summit 2020 in Marrakech, Morocco, held from 30 March to 3 April 2020, the Global Alliance conducted a business meeting open to founding and new member organizations to discuss achievements, lessons learned and its future. The Summit brought together people from across the globe, including Global Alliance members, to examine the most recent evidence and innovations in our field of work, build on our diverse methodologies and provide a forum for us to debate our way forward while highlighting successes and challenges.

Three-cluster structure

The Global Alliance has organized itself around three areas of work, which we call clusters:

- 1. Evidence for Impact:** this cluster is focused on compiling evidence from the SBC field of work. Led by the Johns Hopkins Center for Communication Programs, a database is being created and coded to bring together a comprehensive review of currently available literature. The database will be structured around the SDGs and will be publicly available.
- 2. Coordination–Infrastructure:** this cluster works to drive the development and functioning of the Global Alliance. It is chaired by the CORE Group, and focuses on the development of organizational bylaws, new member onboarding, website development and an SBC code of ethics.
- 3. Policy Engagement:** this cluster, chaired by UNICEF, works to advance the field of SBC by advocating for better funding, positioning and recognition through high-level dialogue and engagement. Much of this work happens through meetings and events attended by member representatives or through the arrangement of special events.

To date, the Global Alliance has been coordinated through a Secretariat, currently staffed on a pro bono basis by UNICEF. Moving forward, the Global Alliance is working to create a sound foundation for itself that includes a more fixed Secretariat, a long-term governing structure and sustainable funding streams. Interested organizations from the Southern and Northern Hemispheres are being considered for membership and onboarding. The movement has begun, and it is our goal to keep it moving and driving the accessibility and use of evidence-based SBC approaches.

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Increasing Adherence to MMS among Pregnant Women in Haiti

Experiences using *Sight and Life's* process for designing behavior change programs

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Key messages

- > Vitamin Angels, the Haitian Ministry of Public Health and Population (MSPP), the Johns Hopkins Bloomberg School of Public Health (JHSPH) and the Haitian Health Foundation are collaborating to implement social and behavior change communication (SBCC) strategies and tools to support the uptake of, and adherence to, multiple micronutrient supplements among pregnant women in Haiti.
- > To achieve this, an SBCC strategy is being developed and tested with guidance from *Sight and Life*, utilizing

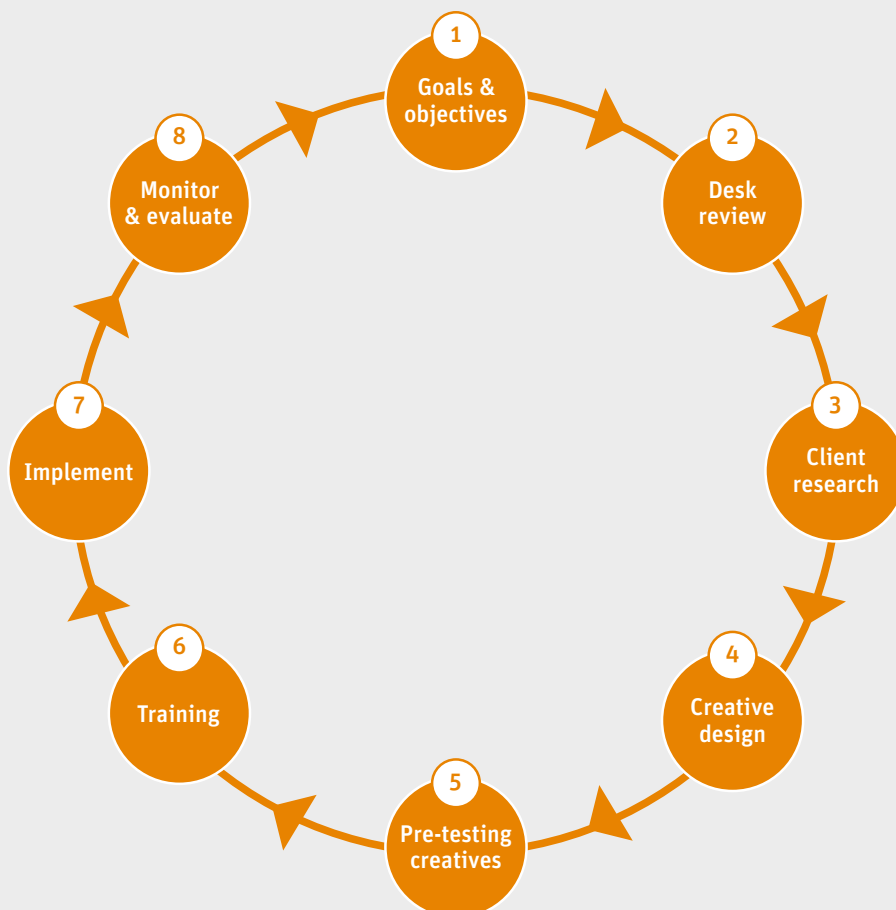
an evidence-based and participatory methodology.

- > As we have worked through the systematic methodology, it has become clear how important it is that the process should be an iterative one – always allowing the insights gained from one step to inform the next.
- > Through this process, we have found that it was important for us not only to understand pregnancy and supplementation in Haiti, but also to broaden our perspective to include all areas of a woman's life to illuminate what is driving the behavior.

Introduction

Micronutrient deficiencies remain a major public health problem in low- and middle-income countries and are of particular concern during pregnancy because of the increased nutrient demands of both the mother and the fetus.¹ Supplementation with iron and folic acid (IFA) is the current standard of care for pregnant women in low- and middle-income countries. However, strong evidence from efficacy trials shows that taking a daily multiple micronutrient supplement (MMS) (containing IFA, and 13 other micronutrients) during pregnancy reduces the risk for low birth weight and being born small for gestational age, above the improvements achieved with IFA alone.^{2,3}

While the World Health Organization (WHO) did not recommend MMS use in place of IFA in its 2016 Antenatal Care Guidelines, it noted that, where appropriate, governments may choose to explore the use of multiple micronutrient supplementation: (1) in programs where significant nutritional deficiencies exist among pregnant women, and (2) after weighing the risks and

FIGURE 1: *Sight and Life's 'Process that culminates in a strategy to change behaviors'*Credit: *Sight and Life*

benefits.⁴ Following the publication of WHO's 2016 Antenatal Care Guidelines, an MMS Task Force was formed (sponsored by the Bill & Melinda Gates Foundation and hosted by the New York Academy of Sciences) to address WHO's concerns. The MMS Task Force conducted and presented follow-on analyses that were not available at the time of the development of WHO's Antenatal Care Guidelines.⁵ Currently, a technical advisory group (i.e., the MMS TAG), a successor to the MMS Task Force, is working to develop operational guidance to: (1) help national health officials interpret the existing evidence including the results of the MMS Task Force's follow-on analyses, and (2) advise those working to introduce multiple micronutrient supplementation as a nutrition-specific intervention for pregnant women.

One finding of this technical advisory group is that supplementation programs for pregnant women have struggled to ensure coverage and adherence to the daily supplementation regimen since their initiation. Both IFA and MMS programs rely on women taking the supplement frequently enough throughout their pregnancy for it to have an effect on their nutritional status. However, establishing and maintaining this daily behavior

can be challenging. To address this challenge, Vitamin Angels (a nonprofit organization dedicated to the global alleviation of micronutrient deficiencies), the Haitian MSPP, the JHSPH and the Haitian Health Foundation are collaborating to implement SBCC strategies that are intended to support MMS uptake and adherence among pregnant women in Haiti. To achieve this, an SBCC strategy is being developed and tested in an evidence-based and participatory method. It will be implemented and scaled up in Haiti to help pregnant women overcome existing barriers and establish daily supplementation behaviors.

“Supplementation programs for pregnant women have struggled to ensure coverage and adherence to the daily supplementation regimen since their initiation”

Partnership with *Sight and Life*

The collaborators sought guidance from the consumer insights and behavior change team at *Sight and Life* and utilized their Behavior Change Communication webinar series.⁶ This webinar series provided a comprehensive background on the importance of behavior change in influencing health behaviors, plus an eight-step process for developing, implementing and evaluating new behavior change strategies and tools (Figure 1).

“*Sight and Life* is providing technical consultation as we move through the steps of the behavior change communication process”

Sight and Life is providing technical consultation as we move through the steps of the behavior change communication process, and has been integral in reviewing findings after each step to ensure that we move through the process in an iterative manner.

Step 1: Establish program goals and objectives

BOX 1: Key elements of Step 1

- 1) Involve stakeholders early in the SBCC process
- 2) Distinguish your SBCC goals and behavior objectives as distinct from program goals
- 3) Identify barriers to, and opportunities for, SBCC

Credit: *Sight and Life*

Using *Sight and Life*'s 'key elements' of Step 1 as a guide (Box 1), Vitamin Angels and the MSPP hosted a workshop in Haiti in September 2018 with key government stakeholders from all 10 geographic departments of Haiti. Participants included representatives from the nutrition, monitoring and evaluation, and pharmacy units of the MSPP. The objective of the workshop was to understand the existing micronutrient supplementation programs for pregnant women in Haiti. During this workshop, an opportunity was identified to explore the implementation of an MMS program for pregnant women. Based on the existing challenges of low uptake of, and adherence to, prenatal micronutrient supplementation, the desire to implement an MMS program provided an additional opportunity to address these behaviors by incorporating an SBCC strategy. During this workshop and



Participants from the stakeholders' workshop in Haiti come together in September 2018 to discuss maternal micronutrient supplementation in Haiti, and also the potential barriers and enablers for increasing MMS uptake and adherence in the country

subsequent meetings, the following program and SBCC goals and objectives were developed:

- > Program goal: Improve nutrition in pregnant women.
- > Program objective: Provide MMS to pregnant women.
- > SBCC goal: Increase uptake of, and adherence to, MMS.
- > Behavior objective: Take supplement every day for 180 days.

Step 2: Desk review

BOX 2: Key elements of Step 2

- 1) PESTLHE and stakeholder analyses
- 2) Working hypothesis/model: What do we know about our audience and their behaviors?
- 3) Recent efforts to change behaviors, and their effectiveness
- 4) Key program indicators: coverage, utilization, quality, satisfaction with services
- 5) Overall capacity in country to design and execute communication campaign

Credit: *Sight and Life*

The goal of the desk review was to continue to identify the constraints, barriers and enablers for daily adherence to supplementation during pregnancy by completing *Sight and Life*'s 'key elements' (Box 2). We engaged relevant stakeholders who were familiar with the antenatal care system in Haiti to conduct:

- > a PESTLHE analysis (analysis of **p**olitical, **e**conomic, **s**ocial, **t**echnological, **l**egal, **h**ealth and **e**nvironmental factors that may affect MMS provision, uptake and adherence);
- > a stakeholder analysis to systematically gather and analyze information in order to understand who holds power and influence and who supports or opposes the maternal behavior changes needed for adherence to the daily supplementation; and
- > a program context analysis to outline current coverage rates and service provision/utilization for our selected geographic area.

Also during the desk review, we completed a comprehensive literature review on supplements for pregnant women to understand: **(1)** the common barriers and enablers in supplementation across different contexts, **(2)** the existing behavior change communication strategies that have been tested to increase supplementation uptake and adherence, and **(3)** the lessons learned from each strategy.

The information consolidated during Step 2 provided a strong foundation for the development of our client research protocol, including highlighting the respondent groups of interest, the themes and topics to explore, and the assumptions to test. Throughout this process, it was important that we consistently challenged or reassessed any assumptions made about factors that might influence pregnant women in Haiti. While experiences from other contexts provided useful background knowledge, we had yet to ascertain whether these ideas or thoughts resonate within the Haitian context.

Step 3: Client research

BOX 3: Key elements of Step 3

- 1) Select inquiry framework (RAP, acceptability trial, etc.)
- 2) Choose methods (qualitative)
- 3) Develop insights (hooks, windows, narratives)

Credit: *Sight and Life*

Utilizing the findings from Step 2, we developed a protocol for our client research (in line with the key elements outlined in **Box 3**). The objective was to understand: our audience; the barriers and enablers for seeking antenatal care; the uptake of, and

adherence to, supplementation during pregnancy; and the channels through which SBCC could be delivered. The development of the client research methodology and assessment tools was an iterative process, and was completed in consultation with *Sight and Life*. Ethical approval for this research was obtained from the JHSPH Institutional Review Board and the Haiti Ethics Board.

Following the completion of virtual research skills training from *Sight and Life*, a 1-week training event was conducted with an experienced data collection agency in Haiti in July 2019. The training included an overview of SBCC, qualitative research, the study protocol and tools, and best practices for conducting interviews (e.g., human subjects ethics training). All data collectors practiced conducting interviews through role-play and piloting activities.

Following this training, representatives from the MSPP, the Haitian Health Foundation, Vitamin Angels and the JHSPH accompanied the data collection team to manage the client research, including participant recruitment, daily debriefings and data management. Client research included in-depth interviews with pregnant women and mothers with a child less than 6 months of age ($n = 14$), influential family members ($n = 10$) and community leaders ($n = 10$). We conducted focus group discussions ($n = 9$) with healthcare professionals about their experiences of providing antenatal care and micronutrient supplements to pregnant women. Interview topics included views on pregnancy, antenatal care, perceptions and experience with supplementation, communication channels, and general motivators and barriers to a healthy pregnancy.

Additionally, we enrolled 25 women in a 2-week at-home acceptability trial to assess: maternal satisfaction, perceived positive or negative effects of supplementation, their desire to continue use, and the barriers and enablers for daily MMS adherence. The trial allowed us to identify the differences between doers and non-doers (i.e., women who took the supplement and women who did not), and strategies that women had used to help them remember to take the supplement – for example, putting the MMS by their bedside table or having their husband remind them to take it.

“The trial allowed us to identify strategies that women had used to help them remember to take the supplement”

The team is currently planning a workshop with relevant stakeholders in Haiti to review the findings from the client research and develop insights to inform the creative design strategy (Step 4).

Summary and next steps

In summary, the overall objectives of this project are: **(1)** to design an SBCC strategy to increase MMS uptake and adherence, and **(2)** to evaluate the coverage (dose, reach, fidelity) and effectiveness of the MMS SBCC intervention in Haiti.

To date, we have completed a comprehensive desk review to inform site selection and the client research that will inform the development of our SBCC strategy and tools.

As we completed these steps, it became clear how important it is that the process is an iterative one – always allowing the insights gained from one step to inform the next. Throughout this process, we have discovered that it was important for us not only to understand pregnancy and supplementation in Haiti, but also to broaden our perspective to include all areas of a woman's life to illuminate what is driving the behavior.

Acknowledgement

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Demand Generation for Acute Malnutrition Treatment

Formative research findings: Understanding health-seeking behaviors to improve Mozambique's National Nutrition Rehabilitation Program

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> Adopting appropriate communication channels within the community and engaging key influencers, such as CHWs, are highly recommended strategies to promote better health-seeking behavior.

Key messages

- > The main challenge identified for the treatment of acute malnutrition in this setting was barriers to behavior change influenced by lack of nutrition knowledge. Beliefs and traditional practices also play an important role in perceptions of the health of children under 5 years (CU5) and pregnant and lactating women (PLW). Conversely, the most important motivational factor for seeking acute malnutrition treatment was the wellbeing of the family, and also observing the benefits of a new behavior among community members.
- > Parents of CU5 do not regard low weight as an indicator of severity requiring immediate health intervention unless accompanied by other signs, such as fever, diarrhea, extreme weakness and loss of appetite.
- > Decisions about healthcare are largely influenced by key family and community members. The husband and the mother-in-law are the most influential in the family, but community health workers (CHWs) and community leaders also have an important influence on decisions related to healthcare.
- > Programs in this setting should focus not only on knowledge but also on motivation as key factors in creating a positive environment for good nutrition and health-seeking behavior.

Introduction

Mozambique is a low-income country with a largely rural population. The country is consistently challenged by food deficits and ranks very low in global indices of development, hunger and inequality. Several persistent obstacles prevent the country from making significant progress on Sustainable Development Goal 2 targets (*End hunger, achieve food security and improved nutrition and promote sustainable agriculture*). These include high rates of malnutrition, lack of economic and physical access to food, insufficient national safety nets, and vulnerability to cyclical climate shock, which exacerbates food insecurity.

“Several persistent obstacles prevent Mozambique from making significant progress on SDG 2 targets”

To support progress in reducing malnutrition in Mozambique, the World Food Programme (WFP) has supported the Ministry of Health since 2010 with the implementation of the National Nutrition Rehabilitation Program. The program focuses on provinces that have a high prevalence of acute malnutrition based on data from nutrition and food security analyses. PLW with moderate acute malnutrition (MAM) who are enrolled in the program receive Super Cereal, while CU5 with MAM receive a ready-to-use supplementary food, both of which are made available by WFP in the district health centers.

To increase the uptake of acute malnutrition services for CU5 and PLW, WFP launched a demand generation program in 2017, informed by robust formative research.

Objective of the formative research and key areas of enquiry

The formative research aimed to better understand how to promote health-seeking behavior, focusing on PLW and CU5 with acute malnutrition, with a view to designing the program. The formative research included three key areas:

- 1) Perceptions around the health of PLW and CU5:
 - a) signs that draw attention to the health of CU5 and PLW, and signs considered to be the most alarming; and
 - b) perception of low weight.
- 2) Barriers and motivational factors related to the healthcare, as well as:
 - a) barriers faced in healthcare; and
 - b) motivational factors in healthcare.
- 3) Networks of trust and communication channels:
 - a) networks of trust within communities; and
 - b) existing community communication channels.

Perception of the health of CU5 and of PLW:

- c) at the family level;
- d) at the community level; and
- e) at the level of health authorities.

Methods

The formative research was conducted during 2 weeks in the provinces of Zambézia (central region) and Cabo Delgado (northern region). Two districts within each province were selected: one located in an urban area, and the other in a rural area. A total of 24 focus group discussions (FGDs) were held with parents of CU5, PLW and community influencers, formed separately and composed of 6–10 participants. Only one member of each household was selected, to avoid mutual influences in the responses. FGDs took place at health centers in the villages in which participants were residents.

Results

Perceptions around the health of CU5 and PLW

The findings of the formative research revealed that the perception of children's health is closely related to their physical wellbeing. Interviewees mentioned signs and symptoms including lack of appetite, frequent crying, fever, pimples, weakness, seizures, diarrhea, red eyes, coughing and rapid breathing as the main indicators of poor health in children. However, some of these conditions are considered to be more worrying than

others, warranting an urgent response from caregivers: diarrhea, fever and vomiting. The reason given for the greater concern associated with these conditions is the perception of the severity of the diseases they indicate.

The interviewees did not mention low weight alone as a sign of concern; low weight only becomes a relevant concern when it is associated with the abovementioned conditions. Another belief related to low weight highlighted by the FGDs is that, while the condition may be caused by diseases or insufficient food, it can also be caused by 'local diseases' or 'external manifestations' beyond the scope of medical science. According to participants, people are often affected by diseases that can be resolved only by a traditional healer and not by a healthcare professional. This perception is based on a belief system that is historically rooted in the daily life of communities, especially in rural areas.

“According to participants, people are often affected by diseases that can be resolved only by a traditional healer and not by a healthcare professional”

Among PLW, low weight is regarded with even less concern, largely owing to beliefs that low weight may be explained by the effect on women of the substantial physical burden of household activities. Only constant fever, headache and bleeding were regarded as signs requiring swift intervention in the health of PLW.

Barriers and motivational factors related to the healthcare of CU5 and PLW

a) Barriers

The FGDs revealed key barriers related to proper healthcare for CU5 and PLW, which can be broadly grouped into two areas: lack of nutrition knowledge and belief system; and fear of adopting a new practice and/or consuming an unfamiliar food product.

Lack of nutrition knowledge and certain traditional practices

The interviewees revealed a lack of knowledge regarding the health and nutrition status of CU5 and PLW, and also a lack of awareness of the causes and consequences of low weight both in children and adults. Furthermore, beliefs and traditional practices have hampered the seeking of treatment when low weight in children is noticed, leading sometimes to severe acute malnutrition.

Fear of adopting a new practice and/or consuming an unfamiliar food product

The participants in the FGDs reported that adopting an unfamiliar product takes time because people need to be sure that

the product is not going to be harmful. They only feel confident when they can observe the benefits of a new practice through a neighbor.

b) Motivational factors

The most important motivational factor for the healthcare of CU5 and PLW was the wellbeing of the family. Keeping a family healthy and free from the threat of illness is a key concern for many. Individuals are motivated to immediately seek health services when they understand the risks posed by the disease and observe the benefits of a new behavior among community members.

“The most important motivational factor was the wellbeing of the family”

Networks of trust and communication channels

The most influential figures within the family are the husband, the mother-in-law and the mother. The husbands have a central role in making decisions concerning care for the children and the PLW. At the community level, traditional healers, religious leaders, community leaders and CHWs are regarded as ‘people who act for the sake of the community,’ and are therefore trusted.

Mobile brigades, community gatherings, influential community figures, neighbors and friends, and national and community radio were identified as the main sources of information. However, the community radio is more widely accessed than the national radio by most people in the districts because its programs offer information about daily life.



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A community health worker visiting a beneficiary of the program



© Chico Carneiro

A beneficiary sharing a success story during a live radio program

Applying the findings of the formative research to improve nutrition

The findings of the formative research informed a strategy to generate demand for acute malnutrition treatment through:

- a) A two-pronged approach focused on: **1)** the utilization of community radio to deliver messages on nutritional rehabilitation services and sensitization programs; and **2)** the involvement of CHWs in screening, referral, follow-up and sensitization activities for acute malnutrition.
- b) The development of communication materials to support screening and referral activities, designed for an audience with a very low level of literacy.

“The program focused on two key domains driving health-seeking behavior: knowledge and motivation”

The program focused on two key domains driving health-seeking behavior: knowledge and motivation. Consideration of these domains was crucial in the design of activities emphasizing a positive environment for nutrition and health.¹ Several aspects are essential in encouraging people to consider their wellbeing and to change their behavior, such as: **a)** information on how to identify the signs of poor health; **b)** perceptions of the risks of diseases, or the threat of death; and **c)** perceptions of the benefits of treatment.^{2,3} The combination of these key motivational factors is critical to address the lack of perception related to low weight in CU5 and PLW, and to create demand for MAM treatment.



A beneficiary in Ilha de Moçambique, Nampula Province, returns to work following completion of treatment

To create a positive environment for nutrition and health, the target audience and CHWs were strongly encouraged to share success stories throughout communities and give testimonials on the theme ‘Why my family is happy,’ as illustrated in the following quote:

“(...) So, at the CHW’s insistence, my mother advised me to go to the health facility. There, they confirmed that I was sick and gave me a treatment, a flour [Super Cereal]. I finished my treatment, and no longer feel weak and do not spend my time in bed (...). Now I’m back to work and am already selling cupcakes with my mom in the market. So my mother is happy now and so am I because I got to take care of my baby.”

Beneficiary, Ilha de Moçambique, Nampula Province

Here we see the social proof approach, in which behavior is learned by observing the actions of others.⁴ In this light, the traditional approach to community radio – i.e., radio spot broadcasting – was expanded to include live interactive programs involving CHWs and beneficiaries, and also live programs within the communities.⁵ Such activities are strategically designed to engage community members in radio programs, allowing them to act simultaneously as speakers and as listeners. These activities position beneficiaries not only as receivers of assistance, but also as active participants.⁶

Illustrative pamphlets, including photos, were designed to support screening and referral activities being carried out by CHWs with low levels of literacy. Understanding the audience’s context when developing such communication materials is key to achieving the desired impact.⁷ These materials were assessed with the CHWs after use, and they highlighted how confident they felt using these materials to support their activities within communities.

Conclusion

The findings of this formative research highlighted key areas to focus social and behavior change efforts to increase the uptake of acute malnutrition treatment for CU5 and PLW in Mozambique. The promotion of health-seeking behavior is often challenged by tradition and by belief systems that have been in place for many generations. A deep understanding of the local context, novel approaches to community mobilization and community radio, and the development of tailored communication materials have in combination enabled better delivery of the National Nutrition Rehabilitation Program in Mozambique.

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Behavior Analytics, Artificial Intelligence and Digital Technologies

Building bridges between biological,
social and food systems

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Key messages

- > The complexity of obesogenic behaviors, and especially eating behavior, is related to its multiple contextual and individual determinants.
- > Large-scale data on human behavior is becoming more available, opening new perspectives on bridging biological, social and food environments.
- > The integration of consumer insights and behavioral economics may help in the design and deployment of interventions targeting lifelong nutrition, health and wellness in a manner that is also economically, culturally and environmentally sustainable.
- > New digital methods of behavior analytics that integrate large-scale data offer opportunities to more deeply comprehend underlying behavioral patterns and their relationship to biological, social and food systems.

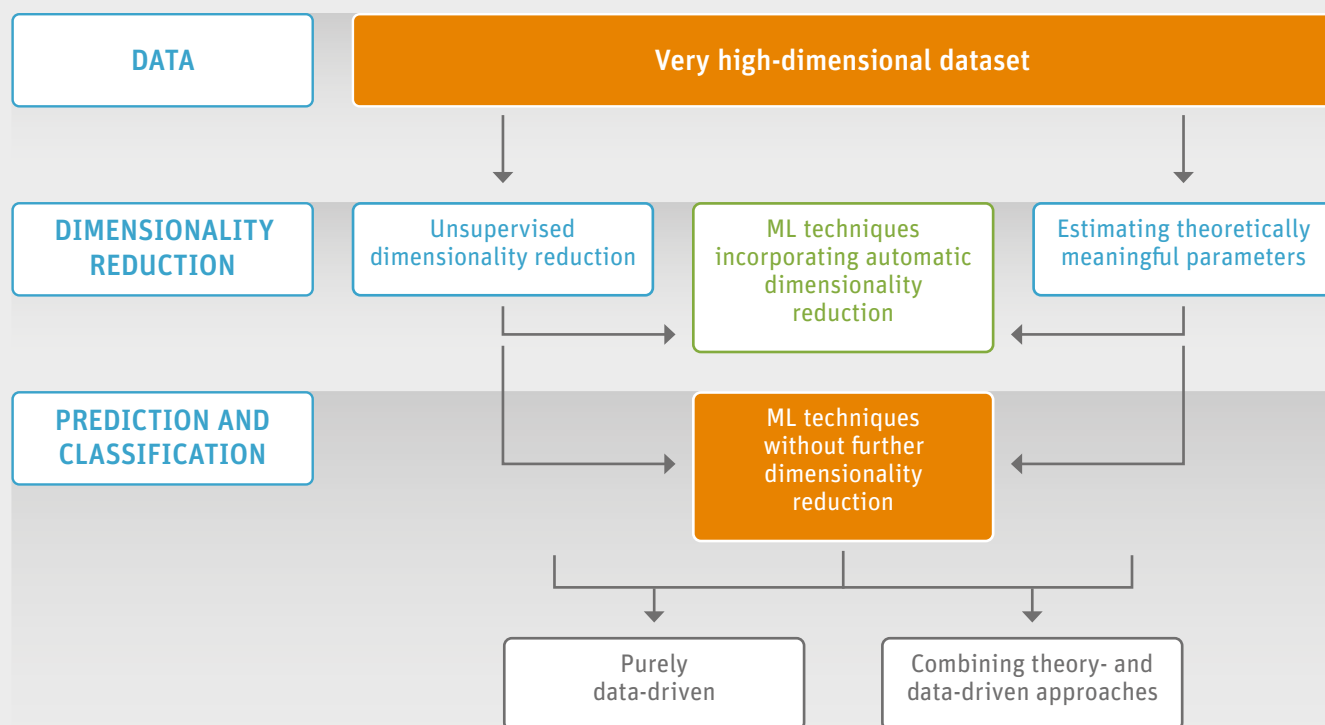
Introduction

Diet-related diseases, be they tied to undernutrition or obesity, remain one of the most pressing societal challenges.¹ In Canada, over 60 percent of the adult population is overweight or obese.² Excess body weight is a significant risk factor for several diseases including heart disease and cancer, which are the top causes of death in North America.³ Alarming, life expectancy in the USA has decreased for 2 years in a row, partly due to diet-related chronic diseases and overweight/obesity.⁴

Meanwhile, India is the 'world capital' for undernutrition as well as diabetes – a chronic disease largely tied to overnutrition.⁵ These figures highlight the urgency for more effective strategies to support both individuals and families in their struggle for lifelong nutrition, and also to assist those actors throughout society that define contexts for food choice and behavior.

**“The most modern methods
of consumer insights are increasingly
informing interventions that target
health-promoting dietary behavior”**

The most modern methods of consumer insights, behavioral economic nudges and other theory-based behavioral assessment and change strategies are increasingly informing interventions that target health-promoting dietary behavior.⁶ These tools hold high promise for improved targeting, with a stronger and more

FIGURE 1: Machine learning (ML): the identification of descriptors based on objective computational functional variablesAdapted from Huys, et al. 2016¹²

lasting impact. Consumer insights, for instance, provide information on the diverse drivers of behavior in different populations and/or in the same individual in different situations or over time.⁷ These are typically combined with the mapping of consumer journeys, an approach that typifies behavioral economics methods designed to acquire a 360° view of how specific foods fit within specific types of eating episodes, and how these episodes accumulate into a person's diet as part of their livelihood, lifestyle, social life and cultural values. Consumer insights also explore how nutrition and health are positioned in relation to other motives such as taste, fun, convenience and price. In commercial contexts, consumer insights also specify all points of value creation along the full experience of shopping, purchasing, preparing, consuming and disposing of food products.^{8,9} The loyalty and relationship management programs of manufacturers and/or retailers encourage the repetition of such cycles and provide opportunities for the assessment of long-term patterns and outcomes.

In addition, the integration of consumer insights and behavioral economics may help in the design and deployment of interventions that target lifelong nutrition, health and wellness in a manner that is also economically, culturally and environmentally sustainable.^{10,11} This is particularly the case considering the richness of data on both real-world behaviors and real-world

contexts that is produced in real time with the ever-increasing and ever-faster digitization of everyday life, economy and society, combined with the power of advanced analytics and artificial intelligence (AI).

This digital transformation is happening not only in industrialized countries but also in still-traditional contexts around the world as they open up to modernization. Digital tools, some of them powered by AI, are now available to support individuals and families in their daily quest for a healthy diet, whether this involves assembling a portfolio of commercial food, homegrown products, or a combination of both. In this paper, we first present a general framework for behavioral analytics, then explain how behavioral insights can be derived from such information, and how predictive and other models can be used to inform dietary choice and, in some cases, to monitor long-term outcomes. We then outline what could be the next generation of decision support that would assist not only individuals but also decision-making by all actors throughout society that are involved in defining the context in which a person's dietary behavior is performed.

General framework for behavioral analytics

Before addressing the content aspects of AI-powered behavioral analytics for life-course nutrition and health, we first offer

a general approach adapted from medical data science to extract theoretically informed insights from big data and digital technologies.¹² This approach aims not only to characterize differentiated behavioral patterns and/or to predict outcomes, but also to trace underlying mechanisms that may be intervened upon (see [Figure 1](#)). The approach illustrated in [Figure 1](#) entails (1) behavioral performance of serious gaming tasks that index various neurophysiological and/or psychological processes; (2) computational models that identify the generative psychological processes; (3) parameter-estimation methods to quantitatively fit these models to individual behavior by hierarchical Bayesian estimation and (4) machine-learning clustering methods to identify key contextual/task conditions and individuals within subgroups. ‘Machine learning’ refers to data-driven, theory-agnostic methods that perform dimensionality reduction in order to extract core mechanisms before performing classification or regression so as to identify descriptors based on objective computational functional variables ([Figure 1](#)).

“This approach aims to trace underlying mechanisms that may be intervened upon”

Moving to the behavioral analytics framework ([Figure 2](#)), it is now possible to capture behavior (e.g., exercise activity, eating habits and health metrics) at an unprecedented level of granularity that was not directly observable at such scale only a short

time ago.¹³ This may be in terms of behavioral components along the consumer journey or else in terms of influences at different temporal or geographical scales that define choice contexts.¹⁴ The domains of food, nutrition and diet have seen the proliferation of apps to support the consumer; these range from shopping aid, through consumption record, to goal setting and monitoring, and are often combined with wearable technologies. The richness of data then allows for the development of health nudges or other interventions, such as using social settings to motivate individuals to adopt healthier lifestyles. For example, recent consumer research shows that users of Fitbit (one of the most popular apps in North America) exercise more if their network of friends also exercises more, compounding the positive effect of the digital support per se.¹⁵ These studies provide the first glimpse about the possibility of leveraging big data in developing healthful nudges.

The second use of big data is for predictive analytics to generate new datasets that would otherwise not exist.¹⁶ Given the wealth of data from the internet, technologies now exist to extract information from unstructured data (e.g., text, images). In fact, research study platforms such as Ethica.com now allow researchers to collect textual and visual information from experiment participants. The analysis of this new type of data is made possible by virtue of the recent advances in machine learning. Recent consumer data science research demonstrates the use of deep learning to help categorize pictures posted on social media platforms such as Instagram.¹⁷ As posting pictures of meals and/or food is becoming increasingly common, this new data can be used to assess (in great detail) the types of food individuals are consuming. Text is another major source of unstructured

FIGURE 2: Behavior analytic framework

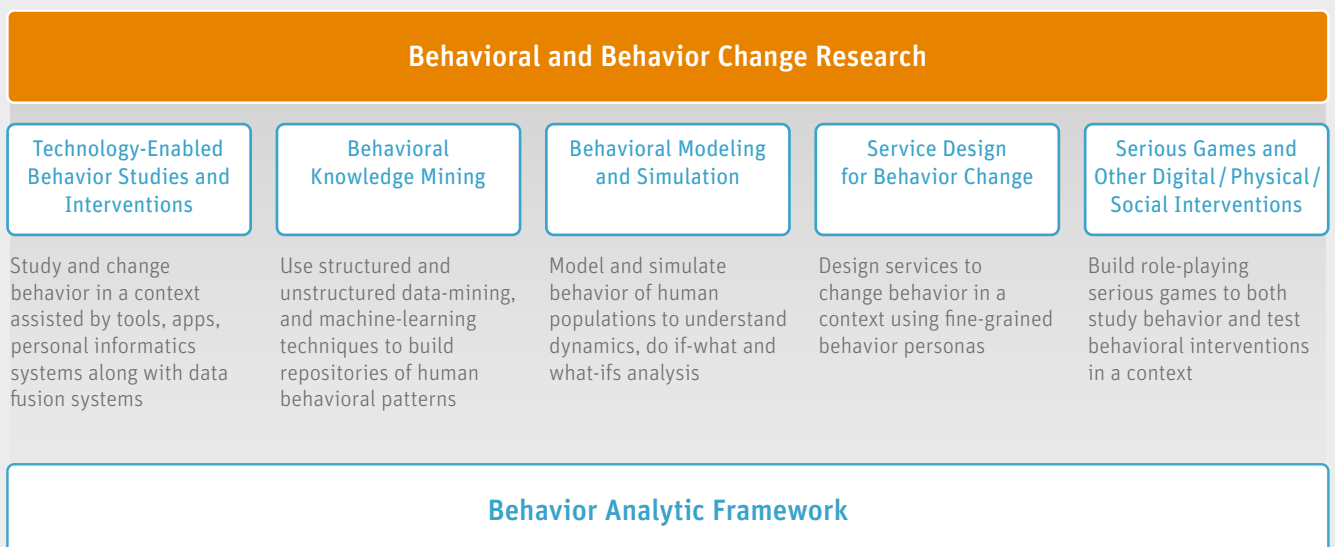
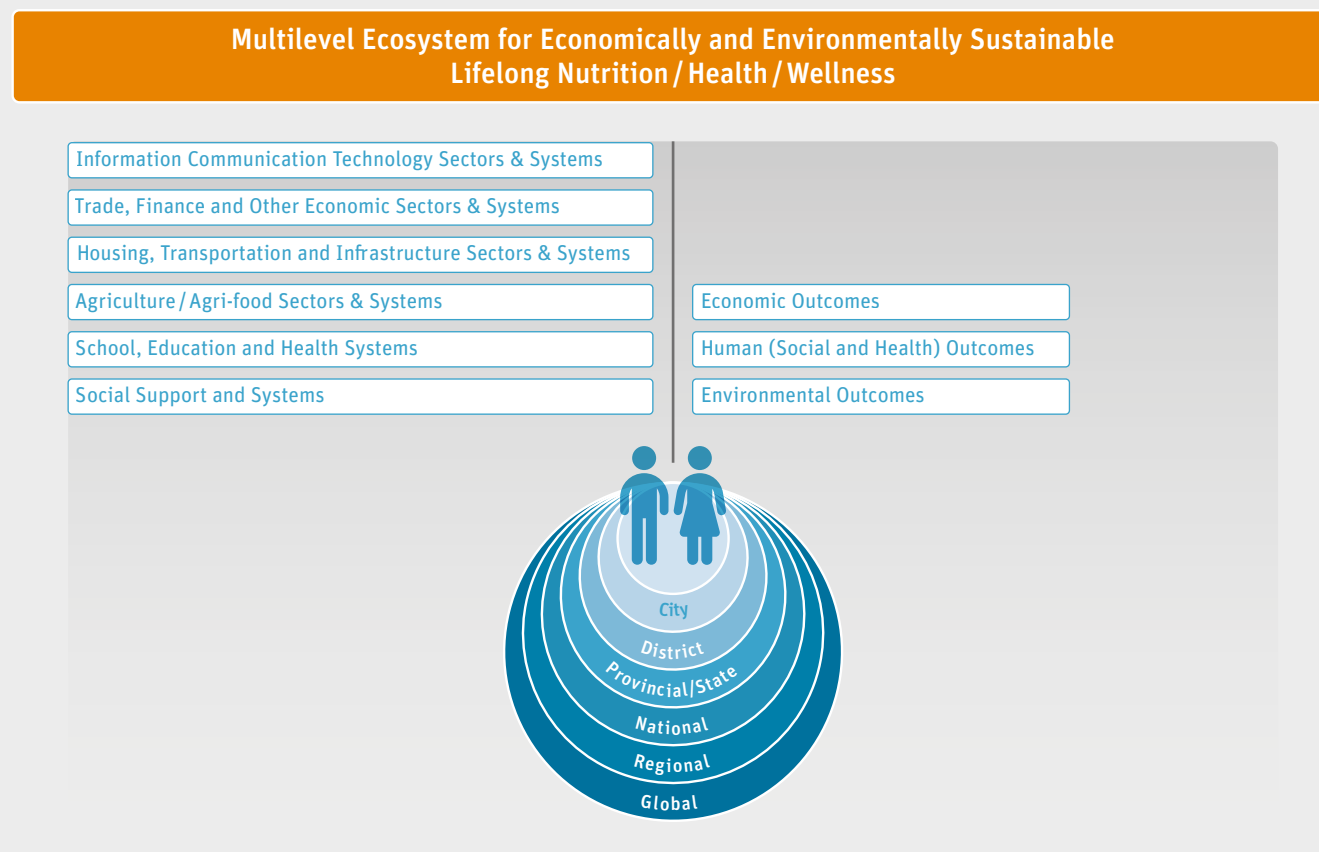


FIGURE 3: Person-centered ecosystem

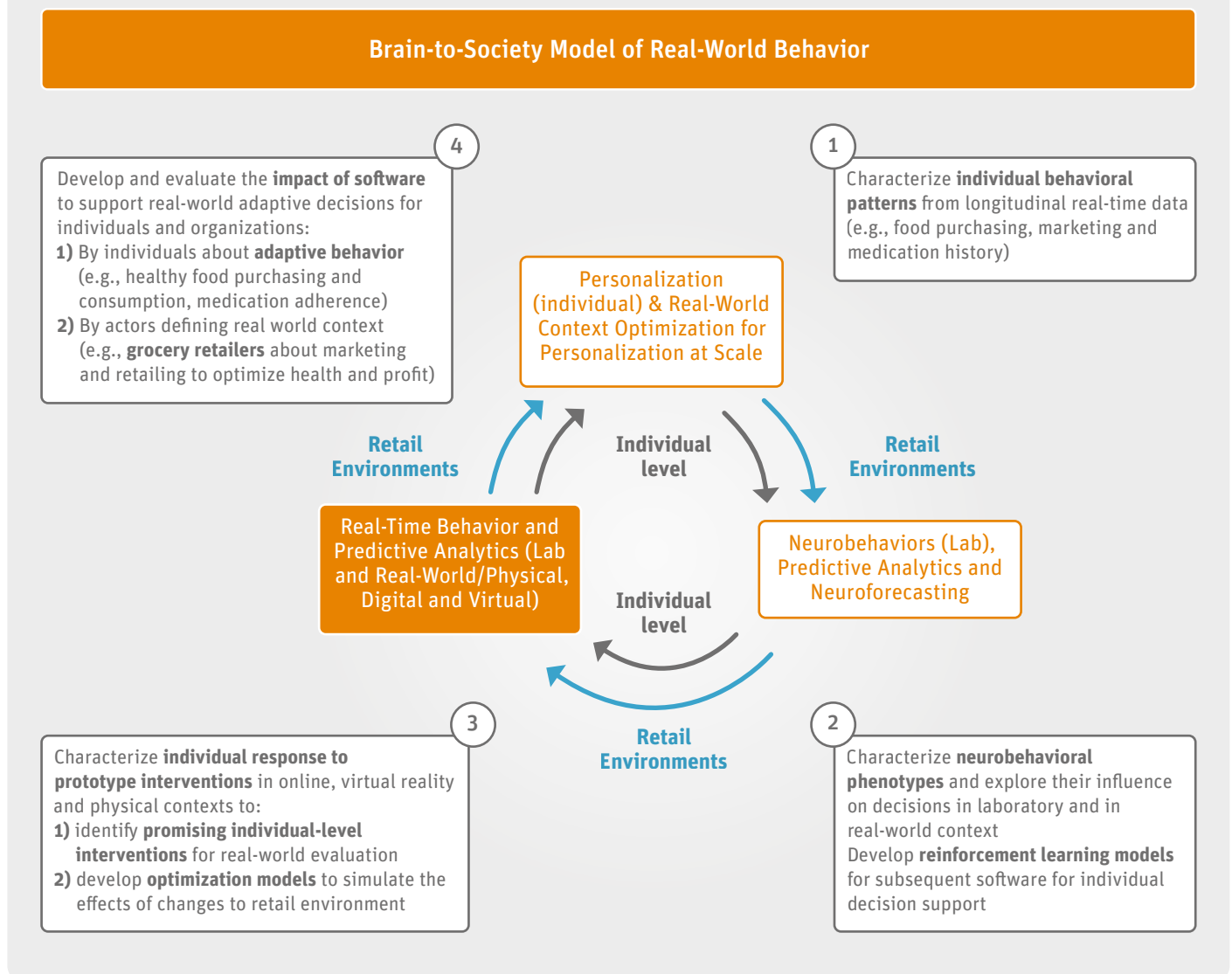
data, and natural language processing has allowed researchers to extract important features from this data. For example, fitness and food trackers are essentially modernized food diaries. Consequently, the ability to process, synthesize and categorize large bodies of text at scale means that these new technologies can be used to convert food diary information into data formats that are conducive to further analysis (i.e., what foods people eat together at the same eating episode).

“The new technologies can be used to convert food diary information into data formats that are conducive to further analysis”

A third use of big data and AI for deriving behavioral insight is to unravel mechanisms and establish causality whenever possible for individuals themselves, and/or in terms of the combined contribution of the complex and dynamic web of biological, social and system-level factors impacting a person's dietary behavior at any time. Such knowledge is necessary in

order to know what works, for whom, when and in what contexts, and also to inform the design of well-targeted nudges or any other innovation/interventions targeting improved nutrition and health. This ensures that the interventions work when they are expected to. Machine learning and AI have helped improve the credibility of causal inferences. For example, an increasingly popular method for causal inference makes use of random decision forests to obtain treatment effects that are heterogeneous across individuals.¹⁸ The ability to obtain heterogeneous effects will allow for better personalization of health nudges, as each individual (or population segment) will likely respond to the proposed behavioral interventions in a different manner in different contexts.

Digital synthetic ecosystems are added to the portfolio of behavior analytics for their ability to position individuals (or, rather, statistically representative units of a given population) within the complex and dynamic contextual conditions impacting behavior at any point in time and over a person's life-course. As illustrated in **Figure 3**, these ecosystems are tied to multiple sectors and multiple scales and jurisdictions. Using systems science approaches, researchers can visualize scenarios that cannot be carried out in real populations or for which adequate historical data on natural experiments are not

FIGURE 4: Behavior analytics for 21st-century research and action for lifelong dietary behavior

available. Computational models can now be developed to capture some of this complexity, but these must be both theoretically grounded and empirically informed. In this context, we are developing for the City of Montreal a SynthEco platform for creating synthetic ecosystems, which are a virtual platform to make statistically representative synthetic populations and environments and simulate the impact of different intervention prototypes over time. This is achieved through the compilation and statistical extrapolation of various disparate data collection efforts (census, cohorts, clinical studies and diverse surveillance data) into a population-level, geographically explicit representation, so as to operationalize government, private and academic research for population-level planning. Traditionally, synthetic ecosystems have served as the basis for agent-based simulation in infectious disease and public health modeling, as well as transport modeling.^{19–22} Synthetic Eco-

systems give researchers the ability to map cohort and cross-sectional data collection efforts, environmental surveys and geospatial information in a common environment in order to represent a diversity of indicators and population characteristics. They can be a powerful support for academic, private and public research, action and monitoring (Figure 3).

Finally, behavior analytics, AI and digital technologies can inform the design of theory-informed and evidence-based health-promoting food/nutrition/health innovations and/or any type of interventions, be these of a digital, social or physical nature. For instance, digital monitoring tools and serious games can support self-regulation.²³ Serious games are digital platforms that combine game technology and game-based methods and concepts with further technologies and research disciplines such as ICT, digital media, sensor technology, psychology, pedagogy and sports science and apply them to different application

domains, including health, persuasive games, advergames and games for education and training of differing complexity.²⁴ As another example, large-scale data can assist in the development of gamification/goal design for healthy nudges, as shown by a large-scale study about millions of mobile users of Lose It – another popular app supporting healthy diet and lifestyle, with the primary goal of weight management.

“Behavior analytics, AI and digital technologies can inform the design of health-promoting food/nutrition/health innovations and interventions”

A framework for 21st-century research and action

In conclusion, as illustrated in **Figure 4**, data and digital tools can be embedded within physical and social laboratories as well as real-world contexts. Taking an adaptive learning approach that combines research and action in a novel way, a brain-to-society approach to behavioral analytics includes cycles of controlled and real-world exploration to account for the whole sequence of biology-brain-technology-society factors acting upon the real-world dietary behavior both of individuals and of populations, in real time and over the life-course. Challenges and possibilities are high and call for a constant consideration of ethical and moral principles, balancing access to an unprecedented richness of evidence against privacy concerns. As we enter the fourth Industrial Revolution, which blurs the boundaries between the biological, physical and digital realms, we believe that behavioral analytics, AI and digital technologies can help in accelerating societal-scale solutions in ways that were never previously possible.

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Food as Love in the Maigret Novels of Georges Simenon

Nutrition in literature

Jonathan Steffen

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“‘Why don’t you come and have dinner at ours, pot luck?’

Good old Lucas had probably added:

‘I can assure you that my wife would be delighted.’

Poor Lucas! It wasn’t true, because his wife, who panicked at the drop of a hat, and who found having a guest for dinner complete torture, would undoubtedly have given him an earful.”²

This is a very innocuous start to a novel. Detective Chief Inspector Jules Maigret is invited to dinner by his lieutenant Lucas at the end of a working day at Paris’s *police judiciaire* (Criminal Police Department) at the Quai des Orfèvres. In the next few lines, we learn that the invitation has been extended because Maigret’s wife is away in the Alsace for a few days, supporting her sister, who is undergoing an operation. So far, so banal.

Yet in the space of five sentences, we learn that Maigret has a loyal and considerate second-in-command who is trying to cheer him up, and that Maigret, while recognizing this act of kindness, knows that accepting the invitation would cause misery for Lucas’s wife and ultimately for Lucas himself. And it’s all about a spot of dinner.

The Belgian author Georges Simenon (1903–89) wrote 75 novels and 28 short stories featuring the fictional Detective Chief Inspector Maigret. Appearing at regular intervals between 1931 and 1972, these stories created one of the world’s most enduringly popular fictional detectives.

Maigret is famous for his pipe, his physical size and strength, and his intuitive approach to solving crimes. He is also famous for his love of food – the homely cuisine of his wife, the faithful Mme Maigret, and also the cuisine he encounters as he moves through the world, investigating case after case.

A number of commentators have noted the prominence of food in the Maigret novels – a prominence that is encountered in the detective fiction of many of Simenon’s imitators and successors.

In the words of Peter Rozovsky of the crime fiction blog *Detectives Beyond Borders*, “Years before Andrea Camilleri’s Salvo Montalbano or Jean-Claude Izzo’s Fabio Montale ate their first fictional meals, there was Inspector Jules Maigret. Georges Simenon’s creation is, of course, right up there with Sherlock Holmes among the world’s most popular fictional detectives. If the benefit of the doubt goes to the detective who eats best, though, Maigret leaves the competition trailing in a cloud of kitchen aromas and pipe smoke.”³

“Maigret has a visceral relationship with food”

Maigret certainly loves his food, and the frequency with which the words ‘lunch,’ ‘dinner’ ‘bistrot’ and ‘restaurant’ appear throughout the Maigret canon is remarkable. The representation of food in Maigret’s world is much more than an opportunity for self-indulgent escapism, however. Maigret has a



Georges Simenon. “I love man ... I love to see him in search of himself, century after century, failing each time, forcing himself to go on again.”¹



"Dish of the Day." *Rognons de veau à la liégeoise, soles normandes, tripe à la mode de Caen, bouillabaisse, coq au vin, veau Marengo, escargots, omelette aux fines herbes and choucroute garnie* are just some of the many classic French dishes referenced in the Maigret stories.⁵

visceral relationship with food, and what he eats is an integral part of each crime investigation he conducts. Food in the Maigret novels is in fact a proxy for love – and, on occasions, for hate and indifference as well. It is absolutely central to the way people live, the way people are, and as such is a quintessential component of the investigative process.

Texture, authenticity and three-dimensionality

"One thing good crime novels give you, along with the puzzle of the crime, is a world," observes historian and novelist Miranda Carter. "It might be Maigret's mid-century France, Rebus's Edinburgh, Shardlake's Tudor England or Carvalho's Spain ... They open up the life and social habits of the world they investigate. Good food writing does the same thing. Roland Barthes wrote, 'an entire world is present in and signified by food.' In crime writing, descriptions of food immediately add texture, authenticity and three-dimensionality. They are a kind of shorthand. Look, they say, this world is real, the glasses are chipped and the shiny hot bacon fat sheens the plates, even if the crime is far-fetched. They also reach out beyond the crime and its investigation. The writer Jason Goodwin ... has written, 'You uncover a place in the scent of a dish, more absolutely than in a thousand words.' This is never more clear than in the Maigret novels, where the inspector learns the world of the crime and its secrets by eating, inhaling the atmosphere of grubby basement bars and shabby bistros, knocking back a small glass of marc, accepting a plate of roast lamb and a few leaves bathed in a garlic dressing."⁴

Table for one

Returning to the dinner invitation that Maigret declines, and which opens the 1951 novel *Maigret Takes a Room*, we can see the extent to which the *commissaire*'s relationship with food is bound up with his closest relationship – that with his wife.

"What did he fancy eating? Because he was on his own, because he could go anywhere at all, he seriously asked himself that question, thinking about the different restaurants that might be able to tempt him, as if he were about to celebrate. First he took a few steps towards Place de la Concorde, and that made him feel a little guilty, because he was pointlessly going further and further away from home. In the window of a butcher's shop he saw some prepared snails, swimming in parsley butter, which looked as if it had been painted.

His wife didn't like snails. He himself seldom ate them. He decided to have some this evening, to 'take advantage', and he turned on his heels towards a restaurant in Bastille, where they are a specialty.

They knew him there.

'Table for one, Monsieur Maigret?'

The waiter looked at him with a hint of surprise, a hint of reproach. On his own he couldn't get a good table, and he was put in a kind of corridor, against a pillar.

The truth is that he hadn't expected anything extraordinary. He hadn't even really wanted to go to the cinema. He didn't know what to do with his big body. And yet he felt vaguely disappointed.

'And what sort of wine would you like?'

He didn't dare to order too good a wine, still not wanting to appear to be taking advantage.

And three-quarters of an hour later, when the street lights had come on in the bluish evening, he found himself standing once again, still on his own, in Place de la Bastille."⁶

With the opportunity to 'take advantage' of his wife's absence by indulging himself on his own, the faithful Maigret is utterly at sea. He can't enjoy the food and drink he orders, he feels ill at ease in his body, and he is even diminished in the eyes of the



Cassoulet – a classic French dish, typical of the traditional, hearty fare favored by Maigret



A couple strolling by the Seine in Paris in the early 1980s. "I love France. Of all countries, it is the one nearest to me, although I do not belong to it and I don't go there regularly." – Georges Simenon⁹

waiter for dining out alone. This passage is not written for gourmet crime-lovers to feast themselves on the vicarious pleasures of the page. It is about how disorientating it can be to be separated from the person you most love.

"He didn't know what to do with his big body"

Midnight feasting

The relationship between food and loyalty is further explored in this novel in a scene involving midnight feasting. Investigating a murder that has taken place directly outside a Parisian boarding-house, Maigret takes the unorthodox step of renting a room there to investigate the crime from the inside (this move also causes him agonized feelings of infidelity to Mme Maigret, who is still away in the Alsace). Maigret suspects the owner of the boarding-house, Mademoiselle Clément, of knowing something about the crime, or even of being a party to it. Unable to sleep one night, Maigret comes downstairs at 2:30 a.m. to find her in the kitchen.

"In front of him, Mademoiselle Clément was standing in her nightdress, her hair held in a kind of net. For a moment it was

impossible to read anything on her face but confusion but then, when you might have least expected it, she exploded in a throaty laugh that made her big breasts bounce.

'You scared me,' she exclaimed. 'My God, I was scared!' The gas was burning in the stove. The kitchen smelt of fresh coffee. There was an enormous ham sandwich on the waxed tablecloth.

'I was so frightened when I heard footsteps that I turned out the light. When the footsteps approached, it made me drop my cup ...'

Fat though she was, her body and her nightdress were still young and appetizing.

'Were you hungry too?'

He asked, without knowing where to look:

'Did you get up to eat?'

She laughed again, more briefly, and blushed a little.

'It happens to me almost every night. I know I shouldn't eat so much, but it's stronger than me. I'm like that King of France who always had a cold chicken on his bedside table.'"⁷

In front of the Detective Chief Inspector, the heavy-bodied and giggly Mademoiselle Clément slowly consumes the vast ham sandwich. Her behavior bears all the signs of compulsive greed. Only later do we discover that she has been hiding in her room a

young man who erroneously believes himself to be suspected of the murder that Maigret is investigating. Stuffing the ham sandwich down her throat in the middle of the night, she protects someone she perceives as an innocent victim against the potential predations of the police: her act of overconsumption is in fact an act of selflessness. It is a wonderful twist in the plot, a completely unexpected piece of Looking-Glass morality.

“I’ve starved too, like Chaplin”

“I’ve starved too”

The food and wine critic Daniel Rogov has observed: “Maigret was more than a great detective. He remains known throughout France as a charming, sensitive man who has earned the respect of his colleagues as well as of the rogues with whom he had contact. It may well have been his special brand of quiet diligence, especially the ability to search out good food, that so endeared Maigret to the hearts of the French – a feat especially impressive when one considers the usual attitude that these good folk hold toward their policemen.”⁸

In a world of food insecurity, the double burden of malnutrition, and broken food systems, it could be tempting to regard the world of Maigret, with its cafés and bistros and good bourgeois cooking, as a place of escapism – a province of the mind in which the reader can play at being a detective and a gourmet at the same time. It is much more than this, however. “I’ve starved too, like Chaplin, like so many others, and I’m glad of it,” wrote Simenon in *When I Was Old*.¹⁰ Born in Liège, Belgium, in 1903, Simenon was a teenager during the First World War, and grew up in a world of tragedy and deprivation. Via journalism, pulp fiction, detective fiction and literary novels, he wrote his way to fame and wealth and security over the course of many decades. But he never forgot the poverty and failure of his early years. He never forgot the importance of food, and love, and home, and he imbued his *alter ego* Maigret with this sensibility too. When Maigret smells the fragrant wafts of French cooking, there is a man inside him with an empty belly and no money in his pocket who smells it too.

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A Day in the Life of Bill Novelli and Diane Ty

Social marketers leading change

One of the co-founders of the global PR agency Porter Novelli, **Bill Novelli** is a recognized leader in social marketing and social change. He is a professor of practice in the Master of Business Administration (MBA) program at the McDonough School of Business, Georgetown University, Washington, DC, and teaches courses in Corporate Social Responsibility, Principled Leadership for Business and Society, and Leadership and Management of Non-profit Organizations.

Diane Ty is Senior Partner leading the Portion Balance Coalition and AgingWell Hub at Business for Impact – an initiative founded by Bill Novelli at McDonough; its mission is to help solve the world's most pressing issues by delivering world-class education and impactful student experience, and through direct action with global companies, nonprofits and government leaders.

Bill and Diane share with us their experience of applying deep consumer insights to purpose-led communication initiatives.

Sight and Life (SAL): Bill, this issue of *Sight and Life* magazine is dedicated to consumer insights in the nutrition space.

In what ways have perceptions of the power of the consumer evolved in recent times?

Bill Novelli (BN): Consumer power has certainly evolved in recent times, and consumers today have a lot more options – both for good and for bad. Consumers today have many more options to find things out about the products put before them, and in many societies, although not all, they have much greater purchasing power than they ever had before. Just think of cars or breakfast cereals, for instance. Henry Ford famously said of the Model 'T' Ford, "You can have any color so long as it's black."

Nowadays we have a proliferation of different types of cars, including electric cars, and there will soon be driverless cars. The same proliferation of offerings exists in the field of breakfast cereals. That said, there are still many companies out there putting bad or flawed products onto the market, and so the dictum "buyer beware" is still as important as ever.

"You, the marketer, are not the target audience"

SAL: From your earliest days at the global FMCG player Unilever, your career has required you to get inside the minds of consumers. How do you approach this, and what have you learned along the way?

BN: In all my marketing experience, I like to fall back on two things. Number one: you, the marketer, are not the target audience. This is important, because people often tend to apply their own experiences when this is not a wise thing to do. The other thing is that you really need to do the research to understand the consumer. And the nature of the research you have to do has changed – it's much faster and less expensive nowadays because of the new technologies available, but you still need to understand the mind of the consumer.

SAL: Diane, since 2014, you have been a Senior Adviser to the Service Year Alliance and its predecessor organization. Could you tell us something about that organization's work, and also about the value of service to the community as you see it?

Diane Ty (DT): The Service Year Alliance is all about making a year of service a common opportunity, and also a common ex-



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Bill Novelli and Diane Ty walk the halls outside the Business for Impact offices at Georgetown University's McDonough School of Business

pectation, for all young Americans. Mahatma Gandhi once observed that the best way to find yourself is to lose yourself in the service of others, and that thought is at the heart of what the Service Year Alliance does. The magic really happens when people from different backgrounds come together and work for a common purpose. Our aim is not to mandate a year of service but rather to make it a cultural norm and expectation, so that when people meet one another for the first time, they might ask “Where did you serve?” – just as we nowadays ask “Where are you from?”

SAL: *You're Senior Project Director of the Portion Balance Coalition and also Director for the AgingWell Hub – two initiatives organized and convened by Business for Impact at the McDonough School of Business. What is the aim of these initiatives, what challenges do they have to overcome and what have they achieved to date?*

DT: In the Portion Balance Coalition, we've brought together representatives from government, industry, nonprofit organizations and academia to address America's obesity epidemic – with the aim to take this to the rest of the world in the course of time. On the demand side, we are orchestrating a campaign to raise consumer awareness of portion balance – meaning volume, proportionality and quality, and not simply portion control. On

the supply side, we're working with key industry players to address portions, starting with the away-from-home eating space.

“Major societal problems can't be solved by one player or one sector alone”

The AgingWell Hub grew out of a collaboration that started with Philips in 2012, and was officially formed in 2015 as part of the White House Conference on Aging. As with the Portion Balance Coalition, we bring together ‘strange bedfellows’ – key players from different sectors, including direct competitors – because we recognize that these major societal problems can't be solved by one player or one sector alone. For example, I led the development of a Caregiver Journey Map for people taking care of loved ones with Alzheimer's disease. We created a persona of a woman who was caring for her aging mother and seeing the various stages of the journey from that caregiver's perspective. As an offshoot of the project, we also created an online calculator that calculates the cost of caring for someone with Alzheimer's at every stage of the journey. The current cost of Alzheimer's to society in the US is staggering. And more recently, we're looking to the Journey Map to model the impact of Alzheimer's on a financial caregiver.



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From left to right: Dena Graham and Nathan Phillips of THAT, Claudia Cukrov and Elisa Silva of SS+K, and Diane Ty discussing creative concepts for the Portion Balance Coalition, a program housed at Georgetown University's Business for Impact, part of the McDonough School of Business

SAL: *The industry use of communication to stimulate societal change is a key theme in your work, Diane, whether at American Express, AARP, Save the Children or, more recently, the McDonough School of Business. In the era of social media, do the new technologies available to us offer genuinely new ways of engaging and mobilizing mass audiences, or do they mean that we are simply doing old things in new ways, in your opinion?*

DT: I think we're genuinely doing new things. New technologies are making it easier to gauge and mobilize mass audiences. You can come up with more messages more quickly, you can reach a larger audience more cost-effectively, you can share actual content on a massive scale, and almost everyone has a voice now and can express an opinion. All that is positive, but there is a downside too, of course, because digitalization also creates opportunities for misinformation and the fueling of strife within society. And none of the new technologies replace the need for face-to-face communication.

“Marketing has always been backed by science. It all just happens much faster today.”

SAL: *Your background is in marketing: you joined American Express in 1987 and rose to become the company's Vice President of Marketing. How much of marketing today is science, do you think, how much instinct and how much plain common sense?*

DT: I don't have a magic formula, but I would say that marketing has always been backed by science. It all just happens much faster today, and there are many more tools in the marketing toolbox.

Nevertheless, marketing still requires a heavy dose of instinct and common sense. Everything that I've done in my marketing career has always been based on consumer insights. What's different now is that those insights can be gathered and analyzed much more quickly, cost-effectively and in much greater depth.

SAL: *Bill, you were co-founder and President of the leading PR firm Porter Novelli, for which you worked from 1972 to 1990. What insights and skills from this experience do you apply to your wide range of not-for-profit work?*

BN: When Jack Porter and I started Porter Novelli, we moved from New York City to Washington, DC, to work for the Peace Corps, and then came up with the aim of creating a marketing communications agency there. We thought Washington was all about health and social issues. That shows you how naïve we were! Of course the place is really all about politics, and power, and money, and sex. Anyway, we applied marketing communications to health and social issues, and we created a niche for ourselves, because no one else was doing that at the time. We joined forces with certain academics who were trying to apply the discipline of marketing to social issues and causes, and in the process we pioneered the concept of social marketing. What you're trying to do in the commercial marketing world is to change the behavior of individuals and to use the marketing mix of Product, Promotion, Place and Price to get a specific individual to buy a specific product.

I went a long way applying that approach to social marketing, but I eventually found that it's not enough. You need to change social norms on a huge, environmental level, which means that you have to go beyond the marketing mix and get involved in



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Diane Ty (center) of the AgingWell Hub at Georgetown University's Business for Impact moderating a panel at the Aging 2.0 event Tale of Two Cities: How Community Impacts Aging, together with (left to right) Dr Lindsay Mullins of Franciscan Missionaries of Our Lady University, Robin Wagner of Louisiana Department of Health, Gwendolyn Sutton of Virginia Hospital Center, and Gail Kohn of Age-Friendly DC



Bill Novelli talking to MBA students about how Business for Impact is working to change the world, by helping companies to do well by doing good

policy advocacy – on the level of legislative, regulatory and even legal advocacy – because policy is the main driver for changing social norms. A good example is the way policy changes have massively driven down the consumption of tobacco. The new communication and information technologies are also important, of course. Likewise important is the role of media, because media can drive social norms. So those are the significant learnings from my days post-Porter Novelli, and I apply them to my current work, which is in the field of social impact.

.....

**“Policy is the main driver
for changing social norms”**

SAL: You founded Business for Impact at the McDonough School of Business in the belief that “business can be a powerful force for good,” as stated on the organization’s website. How, in practical terms, do “successful companies do well by doing good”?

.....

BN: Firstly, I would say that “doing well by doing good” is not just about ethical behavior – because everything, actually, has to be about ethical behavior. When you get up in the morning and get dressed and go to work, you have to be legal and ethical. Lots of people say that Corporate Social Responsibility and the Triple Bottom Line of People, Planet and Profit are about ethics, but everything is in fact about ethics. Secondly, I’d like to mention the role of the Anglo-Dutch fast-moving consumer goods company Unilever within the Portion Balance Coalition as epitomizing doing well by doing good. So to my mind, it’s all about companies finding the ‘sweet spot’ by building environmental, social and governance (ESG) strategies into their core business. If you can do that, you can create greater financial value for your stockholders and investors and at the same time create social value for the rest of society.

SAL: Diane, your Ad Council campaign, ‘Do Good, Mentor a Child’ won an Effie Award when you were working at Save the Children. What is the essence of a good advertising campaign?

.....

DT: I think it starts with a very strong emotional connection to the audience. Then you need a clear call to action: what do you want people to do? And the third component is the ability to measure results. A great advertising campaign is all well and good, but did it actually achieve what it set out to do? We ap-



Bill Novelli introducing a roundtable on ‘Next Generation Tech’ sponsored by Philips North America, a sponsor of Business for Impact

plied those criteria to the ‘Do Good: Mentor a Child’ campaign, which was all about encouraging adults to volunteer to spend quality time with a child in their community, letting that child know there was a caring adult other than a parent or guardian in their lives.

SAL: *The world remains fascinated with the perceived glamour of public relations, marketing and advertising – as witness, for instance, AMC’s award-winning 2007–2015 TV series Mad Men, which is set primarily in a fictional advertising agency on Madison Avenue in Manhattan, New York City, during the 1960s. Are these disciplines as glamorous as they are sometimes perceived to be, and does advertising still have the power it used to have in the ‘golden days’ of Madison Avenue?*

DT: I think that the work done by advertising is still really important and powerful, but there have been two big changes since the days of *Mad Men*. One is the huge amount of industry consolidation that has taken place, and the other is the shift to online advertising, with data scientists now in the mix. We can now target audiences more precisely than ever before and use real-time analytics to assess the effectiveness of advertising initiatives. Creatives have much more powerful tools at their fingertips; and at agencies, there’s still a need for strong strategy and relationship management skills, and for good leadership. And of course, there are many more opportunities for women and for people of color.

SAL: *Bill, you have had leading roles in international relief and development (with CARE), ethical campaigning (Campaign for Tobacco-Free Kids) and improving people’s quality of life as they age (AARP). What drives you to devote so much energy and professional expertise to these and other social initiatives?*

“I think ethics are important for everybody”

BN: I think ethics and social responsibility are important for everybody. I run a program on ethical leadership here at Georgetown in which we ask the questions: “What is leadership?” and “What is ethics?” All the world’s great religions, of course, have the same premise, which is the Golden Rule: Treat other people as you would have them treat you. Our society is currently wrestling with the question, “What is ethical behavior?” – and it’s a question we have to ask ourselves every day.

SAL: *‘Hands-on service’ is key to the work of the Service Year Alliance, Diane. Is there a figure, real or fictional, who has particularly inspired you in your commitment to give something back to society?*

DT: I don’t think I could point to a particular person, but events experienced as a child have certainly shaped my worldview. My parents are of Chinese origin and come from the Philippines. I was very struck by the poverty I witnessed when visiting the Philippines together with my parents at the age of 12. It made me feel that I should work not just for financial gain but for a real purpose, and this experience has inspired my whole career in the nonprofit sector. That’s how I met Bill, of course, and I continue to meet inspiring people along the way. Service works!

Bill Novelli and Diane Ty were interviewed by Jonathan Steffen

Further information

Business for Impact

> businessforimpact.georgetown.edu

Portion Balance Coalition

> portionbalance.org

AgingWell Hub

> www.agingwellhub.org

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Remembering Dr John Hathcock

Reflections from Andrew Shao

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Dr John Hathcock

John was a prolific author of peer-reviewed, published scientific articles. It's hard to know for sure, since there are other 'J Hathcock' authors, but my estimate is close to 100 peer-reviewed articles in PubMed. Many of them, of course, focused on his passion: Use of risk assessment to establish science-based maximums for nutrients (and bioactives). Between 2006 and 2013, John and I were co-authors on 10 publications,

mostly focused on risk assessment. I was never more productive in terms of publishing than during that time when I worked with John. He was the master mentor, and I was the eager student, and I believe we formed the most prolific tandem CRN – or any other supplement association – has ever experienced, or will ever experience. Our work is still to this day referenced by companies and governments, and served as the basis of many IADSA documents and guidelines used throughout the world.

“John was a master mentor”

Hathcock's Observed Safe Level method now recognized by WHO

John's concept that he called “Observed Safe Level” – or OSL – was revolutionary and preceded any formal recognition by many years. John first came up with the term when authoring CRN's first edition of the *Vitamin & Mineral Safety* book. It was meant to address those nutrients for which there was ample safety data, but for which no Upper Level (UL) could be derived.

For some nutrients, without a hazard, or identification of an adverse effect, by definition, no UL could be derived. The

absence of a UL for nutrients such as vitamin B₁₂ was misconstrued by some governments as lack of safety data – and license to apply the precautionary principle, setting maximums based on RDA multiples. But B₁₂ has lots of safety data, just no toxicity. So rather than having no UL (or no number), John proposed the “OSL” – a value representative of studies that had been conducted on a nutrient for which no toxicity had been observed.

“Governments all over the world now use John's approach”

Other governments followed this (for example, the UK, with a B₁₂ ‘guidance level’) and in 2006, the World Health Organization (WHO) formally recognized this approach but used a different term: ‘Highest Observed Intake’ or HOI. Although John was clearly the pioneer of this approach, he never received formal recognition or credit from any government body or organization for this. Still, being John, he was never concerned with getting credit; he only cared that folks finally got it right. Now governments all over the world use this approach.

In addition to its use for policymaking with nutrients, the OSL/HOI approach is being applied to bioactives, as well, following some additional efforts of ours. Similar to B₁₂, many bioactives have been studied at high doses, but no toxicity has been observed in humans so a UL cannot be established.

I'm so proud to have had the opportunity to work with, and be mentored by, John.

Andrew Shao PhD,

Interim Senior Vice President, Scientific & Regulatory Affairs,
Council for Responsible Nutrition (CRN),
Washington, DC, USA

Coluthur Gopalan (1918–2019)

The father of nutrition research in India is no more



© National Institute of Nutrition

Dr Coluthur Gopalan
(1918–2019)

Dinesh C Sharma
India Science Wire

Dr Coluthur Gopalan, widely considered as the father of nutrition research in India, is no more. He was responsible for initiating nutrition research in independent India, leading to a number of interventions such as the Integrated Child Development Services (ICDS), the midday meal scheme

for school children and the goiter prevention program.

Dr Gopalan, decorated with top civilian honors and several professional awards, would have turned 101 on 28 November 2019. He passed away in Chennai on 3 October 2019.

He was the Director of the Hyderabad-based National Institute of Nutrition (NIN) from 1960 to 1974 and Director General of the Indian Council of Medical Research (ICMR) from 1974 to 1979. He later founded the National Nutrition Foundation and served as its Chairman till the end.

Starting his professional career in nutrition research at the Nutrition Research Laboratory (NRL) during the British period, he continued his journey over the next six decades. In the late 1950s, NRL moved to Hyderabad and became NIN. Gopalan took over as Director and expanded research to several key areas. Since nutrition is a multidisciplinary subject, he set up divisions for clinical research, biochemistry, bio-physics, endocrinology, analytical chemistry, food toxicology and the field units.

“At NIN, he laid the foundation for research to tackle problems such as protein energy malnutrition, vitamin A deficiency, phrynoderma, lathyrism, fluorosis and pellagra”

At NIN, he laid the foundation for research to tackle problems such as protein energy malnutrition, vitamin A deficiency, phrynoderma, lathyrism, fluorosis and pellagra. The National Nutrition Monitoring Bureau (NNMB) was also a result of his labor.

Under his leadership, ICMR expanded research into neglected communicable diseases and modernized the working of the Council. Three new institutes – the Malaria Research Institute, the Vector Control Research Institute and the Leprosy Research Institute – were established to develop and implement preventive and management strategies for these diseases.

Dr Gopalan also got NIN to work on Indian foods, resulting in a publication entitled *Nutritive Value of Indian Foods*, which was based on analyses of over 500 Indian foods. This work was used for calculating the dietary intake of all nutrients. This made India the first developing country to have its own Recommended Dietary Allowances (RDAs).

“NIN today bears testimony to his genius as an architect and father of nutrition sciences in India”



© Dinesh C Sharma

The National Institute of Nutrition (NIN) in India

“NIN today bears testimony to his genius as an architect and father of nutrition sciences in India. Research under his leadership formed the basis of major national nutrition programs initiated in the 1970s – ICDS, Massive Dose Vitamin A and Iron Supplementation,” commented Dr R Hemalatha, Director, NIN.

“Dr Gopalan was a visionary institution builder. He viewed medical and nutrition science from a holistic perspective and

always wanted to address them taking a multidisciplinary and multisectoral approach. His contributions to medical science in general and nutrition science in particular are immense. He, in fact, brought nutrition to center stage and was instrumental in putting it as an important driver in the developmental plans and policies of the country,” said Dr Balram Bhargava, Director General of ICMR.

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Dr Gopalan was conferred with the first FANS Living Legend Award by the Federation of Asian Nutrition Societies (FANS) during the 13th Asian Congress of Nutrition in Bali in August 2019. Dr Gopalan was a founding member of FANS and continued as an honorary executive member until his decease.

His colleagues Al Sommer and Keith West remember him:

Before there was a WHO* (1948), UNICEF (1946), ICNND (1955), NIN (1958), USAID (1961) and DHS (1984); before there were DRIs (1997), and methods of HPLC (1967) and AAS (1955) to assess nutrients; before the synergy of nutrition and infection was published by Scrimshaw, Taylor and Gordon (1959 and 1968); before the emergence of nutritional epidemiology as a discipline (1960s); before there was a Department of International Health at Johns Hopkins (1961) or even an independent India itself (1947), there were the observations, insights and writings of Dr CG Gopalan, physician and nutritionist, addressing the plight of India's malnourished. May he rest in peace, and his mission carry on.

*** Abbreviations in order of appearance:**

World Health Organization, United Nations Children's Fund, Interdepartmental Committee on Nutrition for National Defense, National Institute of Nutrition in Hyderabad, US Agency for International Development, Demographic and Health Surveys, Dietary Reference Intakes, high-performance liquid chromatography, atomic absorption spectroscopy.

Keith P West Jr, DrPH, George G Graham Professor of Infant and Child Nutrition, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

Alfred Sommer, MD, MHS, Dean Emeritus and Professor of Ophthalmology, Epidemiology and International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

Frances Davidson (1942–2019)

Noted international expert in nutrition dies



Frances Davidson
(1942–2019)

Margie Ferris Morris
Chair, World Hunger
Education Service

Frances Davidson, an international expert in nutrition, passed away on Sunday 12 May 2019 in Washington, DC, USA, after a sudden and severe brain aneurysm.

Hunger Notes conducted an interview with Frances in 2012 after she retired from working with the United States Agency for International Development (USAID) for 24 years, dedicating her efforts to improving the nutritional wellbeing of people in developing nations. She served as acting Director of USAID Office of Nutrition and Director of nutrition programming at USAID during that time. Here is the interview recounted.

After completing a doctorate at the London School of Hygiene and Tropical Medicine, Davidson came to Washington, DC, with her husband, who took a post at the British Embassy. She was hired in 1987 to work in the US Agency for International Development's Office of Nutrition, and soon afterwards rose to directing the office. She oversaw the merger of the Office of Nutrition into the larger Office of Health and Nutrition (later the Office of Health, Infectious Diseases and Nutrition; HIDN) within USAID, where she continued to focus on issues of malnutrition in low-income countries.

During her tenure at USAID, she grew the Agency's nutrition program by establishing relationships with related sectors such as reproductive health, education, infectious diseases, agriculture and gender.

Given the modest resources of the nutrition program, Davidson worked with colleagues to catalog the reasons for malnutrition in a particular country and then identified the aspects that were appropriate for USAID investments. To this end, she built

upon previous work and continued the funding of research and analysis, both scientific and programmatic, in developing countries through agreements with universities, governments, non-governmental organizations, foundations and private-enterprise organizations.

“One of Davidson's major accomplishments was to continue supporting vitamin A research”

One of her major accomplishments was to continue supporting vitamin A research and propelling forward vitamin A policies and intervention campaigns to address this debilitating deficiency. Part of that initiative was to support Dr Alfred Sommers' groundbreaking research on vitamin A's relation to young childhood morbidity and mortality.

Congressional support for efforts to increase child survival and prevent childhood malnutrition allowed Davidson's office to expand the original idea of blindness prevention through vitamin A distribution to one that included treatment, rehabilitation and skill development to enable individuals with varying types of sight impairment to lead productive and meaningful lives. USAID worked closely with the Perkins Institute on blindness prevention as well as the Seva Foundation, HKI, the International Eye Foundation (IEF) and others to achieve this. In order to maximize impact, USAID sought out innovative ideas to reach those in need and beyond the range of most programs. In order to help accomplish this, the Office of Nutrition worked on developing private and public partnerships, such as with Hoffmann-La Roche/*Sight and Life* Foundation and BASF to supply vitamin A capsules and conduct research. For instance, Hoffmann-La Roche supported *Sight and Life* to promote young investigators' work.

Additionally, Davidson and her office developed and fostered private-sector partnerships to promote food fortification with micronutrients and other important nutrients in a number of countries. The Division of Nutrition joined with the Bill & Melin-

da Gates Foundation and others to help start GAIN, the Global Alliance for Improved Nutrition, with the focus on expanding the application of food technologies to improve the nutritional quality of foods in as many low-income countries as possible.

The translation of science and technology into programs that were appropriate to low-income countries and that improved lives was central to her work.

Recognizing the fact that if a population was deficient in one critical nutrient, such as vitamin A, there was a good chance they were deficient in others, Davidson expanded the program and policy portfolio to include a range of vital nutrients, in particular iron deficiency anemia. In order to help countries document the extent of the deficiency, USAID supported the development of the HemoCue, a simplified field tool that could be used by minimally trained field workers to assess iron deficiency. Demographic and Health Surveys (DHS) began using it in select country assessments.

In addition to documenting the extent of anemia in populations, Davidson and her office worked hard to get important nutrition indicators – such as dietary diversity to better understand nutritional deficiencies and their health outcomes – included in DHS, health surveys conducted in many different developing countries over many years, which have been crucial in demonstrating progress, or the lack of it, in key measures of health.

.....
“The efforts of Davidson and her colleagues at USAID have advanced overall knowledge of micronutrient deficiencies”

The efforts of Davidson and her colleagues at USAID have advanced overall knowledge of micronutrient deficiencies and their role in health and wellbeing and policies and programmatic practices to treat nutritional problems in order to promote the development of individuals and their communities.

.....
After retiring from USAID, Frances became a master gardener, loved to knit, and enjoyed swimming and being with family. Her work and accomplishments in the field of nutrition will be remembered for decades.

This obituary originally appeared on the website of the World Hunger Education Service (WHES) at: <https://www.worldhunger.org/frances-davidson-noted-international-expert-in-nutrition-dies/>. Reprinted in abridged form with permission.

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IMPACT4Nutrition

Using a public–private engagement approach to create a social movement in India

Madhavika Bajoria

Sight and Life, Bangalore, India

Kalyani Prasher

IMPACT4Nutrition Secretariat

Geetanjali Master

UNICEF India

Key messages

- > The Government of India has launched a social movement, POSHAN Abhiyaan *jan andolan*, to target malnutrition.
- > IMPACT4Nutrition (I4N) is a unique public–private engagement (PPE) to bring together the diverse private-sector companies interested in contributing to the Government’s social movement.
- > All I4N tools and resources are developed around POSHAN Abhiyaan guidelines, as they target key nutrition behaviors.
- > Promoting nutrition in the workplace is the first priority identified by I4N and partnering companies because workplaces provide repeated interaction with a captive audience in a contained environment that can easily be modified.
- > The I4N platform is already reaching a combined workforce of nearly 100,000 employees and their families.

A *jan andolan* for nutrition

Malnutrition is a major concern in India. Almost one-third of the country’s children are stunted and over 50 percent of Indian women are anemic. Undernourishment is also the leading cause of the

high mortality rate of children under 5 years of age (39.4 percent of the registered births); it is additionally the leading cause of compromised adult health for those who do survive. When the health status of an individual is inconsistent, their productivity is low. The latest Government of India data indicates that undernourishment is currently responsible for an annual loss in adult incomes of 22 percent and an annual GDP loss of some 11 percent.^{1,2}

“Undernourishment in India is currently responsible for an annual GDP loss of some 11 percent”

According to the Copenhagen Consensus, investing in nutrition is the best public health investment one can make: for every US\$1 of investment there is a return of US\$16, as better health leads to better employee retention, a dip in absenteeism and increased productivity. On 8 March 2018, when the Government of India launched a massive drive to tackle malnutrition in the country, it proposed to do so by way of a *jan andolan* (Hindi for social movement). The Government was well aware that its ambitious flagship program, POSHAN Abhiyaan – which aims to improve the nutritional status of children, adolescents, pregnant women and lactating mothers – could not be successful without the active and enthusiastic participation of a large stakeholder base. Right at the outset, the Government released clear guidelines on how it aims to achieve its targets by engaging players from multiple sectors and involving the masses, thereby creating a *jan andolan* for nutrition.

Public–private engagement: the role of the private sector

In the POSHAN Abhiyaan *jan andolan* guidelines, the Government recognizes the private sector as a major driver for economic growth and its vast reach and scale as an enabler for impactful change within its ecosystem. To convene and catalyze



The launch of IMPAct4Nutrition, with representatives from the Government, the private sector, institutional and technical partners, and businesses pledging their support for a healthy India

this PPE (public–private engagement), I4N was launched by a diverse network of partners including UNICEF, *Sight and Life*, CSRBox, Tata Trusts and the Confederation of Indian Industries. A PPE has the potential to help governments deliver on their targets, harness the power and reach of businesses, and reduce the financial and health burdens that are linked to malnutrition. It can only achieve these goals, however, if it is carefully designed, implemented and evaluated.

I4N was designed by the convening partners to be a brand-agnostic platform that would bring together, under one umbrella, the diverse businesses that are interested in contributing to the good nutrition of all stakeholders in their ecosystem. The platform aims to promote collective responsibility and meaningful exchange between businesses, so they can help build a movement to support POSHAN Abhiyaan. A PPE takes many forms: from dialogue to coordination to collaboration to partnership. For the I4N platform, it is the curation of ideas and tools leading to improved workforce nutrition (see **Boxes 1** and **2**).

BOX 1: Public–private engagement in action: How is IMPAct4Nutrition impactful?

By the IMPAct4Nutrition Secretariat

IMPAct4Nutrition engages with companies in three strategic areas, which are referred to as the **ACE** card:

- > **A**ssets and core business for nutrition
- > **C**ash/**C**orporate social responsibility for nutrition
- > **E**mployee engagement for nutrition

The Secretariat is the administrative and program hub for the IMPAct4Nutrition platform. The Secretariat, along with the private sector, co-creates, designs and develops a robust knowledge base, prototypes of products, tools and content for nutrition literacy across the ACE card framework. This is used by companies in their ongoing corporate social responsibility initiatives and employee engagement programs. The co-created tools can be further customized according to each company's unique requirements.

Government partners



Initiative partners



Pledged companies



Why focus on workforce nutrition?

Fifty-eight percent of the world's population will spend one-third of their time at work during their adult life and have at least one meal a day at work. Faced with a malnutrition problem on the scale that we see in India, the I4N convening partners, in accordance with the Government's guidelines, zeroed in on workforce interventions as the central theme of the PPE. The workplace – whether in urban or rural settings, high- or low-income contexts, corporate or supply chain businesses – offers unique opportunities to address malnutrition. Employers can play a fundamental role in their employees' lives by contributing to the improvement of their diets, ideally as part of a broader approach to employee wellbeing and the promotion of

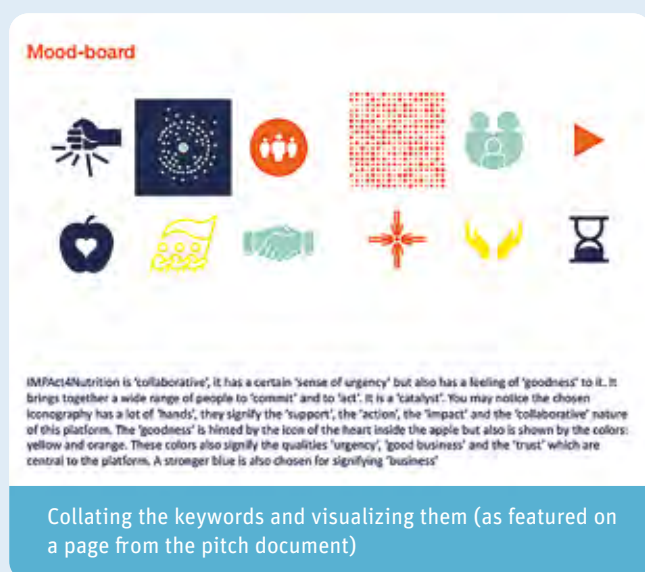
BOX 2: Designing for a *jan andolan*: Creating a public-private engagement brand

By Anne Milan, Design Specialist, *Sight and Life*

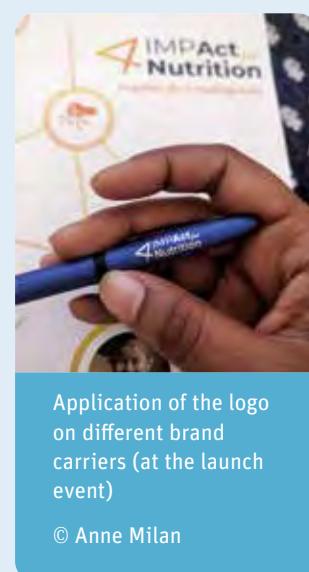
The design challenge: Creating a cohesive brand identity for a multistakeholder platform.

The process: The branding process involved two major steps: (1) understanding the objectives of the platform, and (2) the design process. To understand the core values of the platform, a questionnaire was prepared for the partners. A good branding process helps not only in creating a strong identity but also in aligning the values of the brand internally.

'urgency,' 'community' and 'catalyst.' Translating the notion of the platform being a trusted advisor was key, as was also instilling a feeling of higher purpose in all partners. The graphical representations of 'impact' and 'action' were further developed into a motif for representing the unique selling point, the collaboration. Furthermore, the keywords were used to build the secondary iconography, which provides clarity and simplicity.



After achieving a consensus within the varied team, a creative brief was prepared that provided the framework for the second step, the design process. This step involved visualizing keywords that captured the essence of I4N. Some of them were



The outcomes: The branding process created a cohesive brand identity that included the logo, the iconography, the colors and the typeface.



An ideation workshop led by IMPAct4Nutrition to engage and support the private sector in order to increase awareness and improve nutrition literacy

healthy lifestyles. There are two reasons why workplaces are such a critical and effective point of intervention:

- > they provide repeated interaction with a captive audience, and
- > they are a contained environment that can easily be modified.

“The workplace offers unique opportunities to address malnutrition”

Workforce nutrition programs are a set of interventions that operate through the existing structures of the workplace – whether a corporate office such as Moody’s Analytics or a large garment factory such as Arvind Mills, both pledged partners of I4N – to address fundamental aspects of nutrition among employees or supply chain workers. Ideally, these programs aim to create improved access to, and demand for, safe and nutritious food, with the aim of changing employee behavior around food consumption, and of improving employee health and wellbeing.

Globally, the four most impactful program areas that are easy to implement alongside other health and wellness program components are:

- > healthy food at work,
- > nutrition education,
- > nutrition-focused health checks, and
- > breastfeeding support.

The vision is that by aligning with I4N, the private sector can help co-create tools and resources to support each of these proven programmatic areas, and can ultimately improve the health of their workforces, significantly reducing the burden of malnutrition in India.

From defining the problem to taking action

With a clear understanding of the transformative proposition of workforce nutrition, I4N quickly realized that there are two key challenges in creating a healthy nutrition environment in the workplace in India: awareness and access. Most of the workers in the country, both blue-collar and white-collar, do not even have a basic understanding of nutrition, so the first step was to create knowledge of the subject. Since the goal of I4N is to catalyze the private sector to support the Government in achieving its POSHAN Abhiyaan targets, the knowledge-creation efforts were anchored around the themes identified by the Government. POSHAN Abhiyaan views nutrition holistically, and as part of the guidelines, the Ministry of Women and Child Development has identified critical and interrelated theme areas. These are both nutrition-specific (e.g., breastfeeding, complementary feeding and anemia reduction) and nutrition-sensitive (e.g., good WASH practices and diarrhea management). All I4N messaging is developed around these guidelines, as they target key nutrition behaviors that have universal applicability across business sectors, employees, customers and suppliers.

“A common pain point was the lack of simple and actionable nutrition messaging for employees”



A sample of the tools and resources developed by IMPAct4Nutrition to promote workplace nutrition

I4N conducted in-depth ideation sessions with our first-pledger companies, which represent companies across sectors, size, employee demographics and geographical locations. A common pain point that we heard echoed by each of the companies was the lack of simple and actionable nutrition messaging for employees, together with a lack of opportunity for their employees to enact good nutrition behaviors in the workplace.

I4N literature around nutrition, such as the ‘The Ten Commandments of Nutrition – For You and Your Family,’ which demystifies common concepts and urges employees to take the first steps towards good health, was developed to be circulated in the workplace.³ The Ten Commandments are divided into two segments, one addressing the employee directly and one for the employee’s family and children, thereby tackling all of the POSHAN Abhiyaan goals such as the adequate intake of protein, vitamins and minerals in everyday food, optimal breastfeeding, and the importance of sanitation and immunization. Detailing the importance of each vitamin and mineral for our health, the ‘Nourish Nuggets’ go a step beyond providing basic nutrition information. They make people aware of the individual elements of good health, and they further the goal of creating awareness of micronutrients. They also explain where they are available at affordable prices.

To create easy access to nutrition literacy for employees, I4N has operationalized the ‘Nutrition Kiosk,’ a one-stop nutrition gateway for the workplace.⁴ The Nutrition Kiosk can take any shape according to the space and budget of different companies – it may be a single shelf or a full-fledged cart – and will be the single point of access for the workforce, providing all the

information and advice they need on good nutrition. From literature such as The Ten Commandments and Nourish Nuggets to health checkups and nutrition counseling, the Nutrition Kiosk can provide any or all of the essential nutritional elements. To ensure that knowledge can be converted into actions, behaviors and practices, the Nutrition Kiosk also contains a range of whole foods, nuts, accompaniments and Government-recommended supplements that employers can provide to their employees either at a subsidized cost or entirely free of charge.

.....
“The Nutrition Kiosk will be the single point of access for the workforce, providing all the information and advice they need on good nutrition”

Both The Ten Commandments booklet and the Nutrition Kiosk have already been rolled out, and the next I4N product – a recipe book, created especially by MasterChef finalist Sadaf Husain, that contains easy-to-make and cost-effective nutritious recipes from each region of the country – is ready for distribution as well. The idea of ‘Nutritious Recipes for the Workplace’ is to make nutrition easy and fun for employees who have little time to invest in their personal health. Companies can also give this book to their canteen chefs, who can easily adapt universal Indian foods such as *idli*, chicken curry and *khichdi* into the more nutritious versions in the book (see [Box 3](#)).

BOX 3: Bringing IMPAct4Nutrition to life in the workplace

By the IMPAct4Nutrition Secretariat

One of the companies supporting IMPAct4Nutrition carried out various nutrition literacy sessions and cooking demonstrations using the IMPAct4Nutrition content with their employees and communities in their catchment area. The goal was to educate employees about healthy eating and nutritious recipes. The sessions also covered simple, actionable nutrition messages that promote healthy behaviors and provided tips on how these can be incorporated into everyday diets. Special attention was given to the needs of infants, children, adolescent girls, and pregnant and nursing women. The community members, who call themselves the 'nutrition companions,' took an oath to return to their respective communities and disseminate their learnings through similar sessions.



Community and workplace engagement within companies that have pledged to support IMPAct4Nutrition

Other activities organized by companies included quizzes, rallies and nutrition talks in schools. The companies also started a 'Let's Talk Nutrition' series by releasing an internal memo for their employees. One company launched a project in partnership with Byju's (an online learning app) that resulted in 16 Government schools in Bangalore receiving their first personalized tablets, which include nutrition content to promote nutrition literacy among students and teachers.



IMPAct4Nutrition pledged partner Arvind Mills conducts a Nutrition Awareness Session at the Tribal Girls' Hostel in Ahmedabad, Gujarat, to impart knowledge to young minds on nutrition, healthy eating and ways to improve their choices about the foods they consume



Employee newsletter on nutrition literacy circulated by a company supporting IMPAct4Nutrition

Looking ahead

In continued efforts to create awareness of, and access to, good nutrition at the workplace, I4N is now working on co-creating more literature to raise the profile of key aspects of good health. Our next set of priorities also includes coming up with a robust monitoring dashboard to track private-sector progress against POSHAN Abhiyaan goals.

In nine short months, 19 big companies have already pledged to actively spread the message of good nutrition and health at the workplace. The I4N platform is already reaching a combined workforce of nearly 100,000 employees and their families in India, and has taken the first steps towards mobilizing the *jan andolan* for nutrition that the country so desperately needs.

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Note: *This is the first article in the IMPAct4Nutrition series. In the next edition of the Sight and Life magazine, you can read more about how IMPAct4Nutrition is mobilizing companies' corporate social responsibility budgets towards increased nutrition programming.*

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A Healthier Future in the Hands of Mumbai's Underserved Communities

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Key messages

- > The second half of humanity is now online, and has access to smartphones. This gives us an opportunity to equip underserved communities with the knowledge, incentives and resources to drive preventive health.
- > Society collectively accrues the benefits of children living to their full potential. We have built a mobile app that is designed to enable the entire community to contribute to building healthier childhoods.
- > Through incentives, carefully designed behavioral nudges, and storytelling combined with a gamified journey, we nudge parents towards better health and nutrition choices for their children.

The potential of smartphones to raise healthier kids

A good foundation in the early years gives the next generation a better start. Early years of childhood form the basis of intelligence, personality, social behavior, and the capacity to learn and nurture oneself as an adult. This is why children need the best possible nutrition and early development inputs in order to enter the formal education system with the hope of achieving the best outcomes.¹ However, India still struggles with providing adequate nutrition and early development to its children.²

“We believe that raising healthy children is as much a responsibility of the community as it is of the parents”

On the other hand, the expanding reach and penetration of data-enabled mobile phones, including among low-income communities, is rapidly facilitating the delivery of services in a cost-effective, fast and seamless manner.³ With this in mind, Saathealth (*Saath* meaning together) was designed to support parents of young children in building healthier childhoods. We believe that raising healthy children benefits the collective society, and hence is as much a responsibility of the community as it is of the parents. Our formative research began in the city of Mumbai, in Govandi – a community that records the lowest human development index in the city, at 0.05, where more than half of the children studying in municipal schools in the area are malnourished.⁴ We generated primary research insights from more than 250 new mothers and fathers living in low-income communities, informing our understanding of the core barriers and digital needs of this population. Next, a multidisciplinary design team of IT experts, behavioral scientists, healthcare professionals, designers and user researchers co-designed a mobile prototype for maternal and child health information. Iterative field-testing, interviews and analytics guided the adaptation of the prototype.³



A woman in Govandi and her young child watch Saathealth content together on their smartphone

FIGURE 1: Saathealth's leaderboard drives community engagement and nudges healthier habits



Saathealth drives positive behavior change

Our parenting app was built to provide behavior change messaging on children's health, nutrition and cognitive development using an entertaining format. We combine storytelling with gamification to nudge parents towards better health and nutrition choices for their children. These stories are built around identifiable characters and a storyline that our audiences can relate to and engage with. Our narratives build upon the light-hearted nature of conversations, including the subtle humor that one would see in most Indian families. Through Saathealth, we explored a unique opportunity to equip the community from within the existing ecosystem in Govandi by establishing strategic partnerships with local grocers and merchants. This enabled us to negotiate discounts on health and nutrition products that we passed on to our families as an incentive for making healthier purchases (Figure 1).

Strengthening the behavior change focus

The most significant challenges in behavior-driven healthcare changes, such as tobacco use, poor diet and nonadherence to medication, are built on the understanding that behavior is sub-consciously influenced by the context within which it is placed.

In India, behavior change is generally approached using traditional policy tools such as legislation, regulation and providing access to information. Among our users, however, we observed that choices are strongly influenced by emotions, the environment and how options are presented. Young parents tend to be the most open to positive behavior changes. Thaler and Sunstein, in their book *Nudge*, suggested that it is possible to 'nudge' towards better choices by incorporating insights about cognitive boundaries, biases and habits.⁵ We adapted these principles into our intervention by (1) providing financial incentives for healthy purchases through our mobile application, (2) incorporating a social dynamic to the ecosystem we created, and (3) refining the gamification experience to improve retention and engagement.

Incorporating consumer insights

After a year of regularly evaluating ongoing consumer-generated data and working with gamification experts, we saw an opportunity to reimagine aspects of the user experience. Over a year, our users had developed their mobile behaviors to accommodate the use of sophisticated mobile apps with complex interfaces. Our users were now used to a greater sense of autonomy on apps: they had to be in charge of their journey and own their progress. Their feedback and behaviors informed the evolution of our app. The new app has been optimized to improve engagement with our content, and thereby more effectively nudge users towards the desired choices.

The intervention

The new Saathealth app offers incentives designed with the understanding of our users' behaviors. Users have access to a curated basket of 24 nutrition items that are available at partner merchant stores (Box 1). These items are recommended by the local nutrition guidelines and are a healthy, economical and easily accessible way to ensure that families have a healthy diet.⁶ For example, we observed that expanding the

BOX 1: Nutrition items available on the app

List of products offered on the app at partner merchant stores

- > Wheat
- > Rice
- > Pulses
- > Groundnut
- > Beaten rice
- > Tapioca
- > Jaggery

- > Coconut
- > Egg
- > Clarified butter
- > Milk
- > Raisins
- > Soya
- > Various types of millet

number of choices was an effective way to change behavior: when users had access to 10 offers and discounts on healthy products, instead of one or two a week, they were more likely to consider making a purchase. Additionally, we created and communicated a scarcity for these offers through targeted in-app notifications, creating an urgency to drive users towards target purchasing behaviors.

“Our inherent conditioning creates a need to belong and seek affiliation with others around us”

Targeted behavior change nudges

We began to incorporate aspects of social influence in our app experience, based on the insight that our inherent conditioning creates a need to belong and seek affiliation with others around us.⁷ Through targeted notifications, we now provide information that informs users about socially acceptable behavior. For example, we link the weekly content theme (breastfeeding, for example) with nudge messages such as “*Did you know that mothers should only give their newborn child breastmilk for the first*

six months?” A series of targeted messages about tracking children’s milestones was extremely successful. Notifications asking questions such as “*Did you measure your child’s height and weight today?*” and providing links to content that explained the importance of these activities were effective in driving these behaviors. Using targeted social messages that inform users of what others are doing in similar situations begins to normalize target behaviors and nudges users towards conformity with social norms. We explored another aspect of social influence through the creation of leaderboards on the app. This new feature displays the highest scoring Saathealth users, and provides each of them with a ranking based on their engagement, quiz scores and self-reported behaviors. This feature is designed to support the user in their journey towards a positive and consistent self-image, offering them a sense of achievement while socially rewarding positive behaviors.

Lastly, we have created a visually appealing game environment that enhances the users’ knowledge, giving them a sense of personal mastery, and promotes observational learning through the use of relatable characters.

The outcome

So far, 72 percent of Saathealth families reported that their knowledge of their children’s health and nutrition had increased since joining our ecosystem. Additionally, 69 percent of users report that they have increased their children’s consumption of high-protein products such as eggs and lentils since downloading the Saathealth app. As the monsoon season is associated with an increase in the prevalence of mosquito-borne diseases, we focused on preventive content and messaging. Before watching our videos, only 36 percent of our users knew how to correctly prevent mosquito bites. That number rose by 74 percent after users interacted with our gamified content experience. By consistently collecting insights from our users and carefully applying them into an iterative design process that involves purposeful structuring of the content, timing of messages and presentation of options, we are continually evolving our algorithms to positively influence behavior.

“Saathealth has been deliberate in connecting with the values, needs and concerns of our users”

Saathealth has been deliberate in connecting with the values, needs and concerns of our users. Incorporating positive emotions in our messaging cements behavior change, and is a great opportunity to connect parents to their goal of a future where their children can live up to their fullest potential, simply through an eco-



Saathealth communities are empowered with the tools and incentives they need to lay the right foundation for their children

system created on a smartphone. One of our first success stories was an increase in the purchase and consumption of protein-rich foods such as lentils and eggs. Videos that promote the health benefits of protein were tied to quiz questions that checked the users' knowledge of the subject. Users could unlock offers on eggs at local merchants, and we could track their shopping behaviors, which gave us clear indications of the increase in the purchase of protein-rich foods. While consumers will continue to use their smartphones for the consumption of entertainment and information on the mobile internet, it would be a missed opportunity if we did not leverage this powerful tool to also empower them with basic needs such as health and education products. The ubiquity of data-enabled phones and the increasing use of technologies powered by artificial intelligence unlock unprecedented opportunities to reach and serve billions of new underserved consumers with transformative products and services.

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Salt Reduction in the Americas

A consumer-centered approach to policy design

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Key messages

- > Population-level reduction in salt intake is considered a 'best buy,' feasible and cost-effective public health initiative for preventing disability and death due to cardiovascular disease and stroke.
- > Broad-based coalitions consisting of governmental agencies, nongovernmental organizations, academics and industry are encouraged to work together to address excessive consumption of salt.
- > Consumer-led approaches, such as social marketing, should be used to reduce salt intake, as they consider the voice of the consumer and develop strategies that are tailored to the local context and work in conjunction with policy change.

People in Latin America are eating too much salt.¹ More than 70 percent of the salt enters the diet through discretionary salt usage or salt-based condiments.^{2,3} It is well established that a high intake of salt is a major contributor to high blood pressure or hypertension, which in turn contributes to cardiovascular disease and stroke worldwide.⁴ Approximately every fifth death in Latin America is due to hypertension, and in some countries every third adult is dealing with this condition.¹

**“Approximately every fifth death
in Latin America is
due to hypertension”**

International bodies have suggested that strategies that modify risk factors for hypertension could go a long way in lowering blood pressure. These strategies include the promotion of healthy diets, increasing physical activity and reducing salt intake.^{5–7} The World Health Organization (WHO) has singled out the reduction of population-level salt intake as a 'best buy' and feasible and cost-effective public health initiative for preventing disability and death due to cardiovascular disease and stroke.^{7,8} Additionally, WHO has established an ambitious goal to reduce the intake of salt to 5 g per day, which constitutes a 30 percent reduction from current levels. This target is part of a broader set of targets that aim to reduce the burden of noncommunicable diseases to 25 percent by 2025.⁹

**“If the consumer does not
have a voice in the decision-making
process, then any policy change
will fall on deaf ears”**

Reaching global targets will require a multi-actor approach comprising government, public health agencies, the food manufacturing industry, the restaurant and catering industry, scientists, healthcare professionals and consumers all working together.^{6,8,10} A recent review of the literature identified that most countries have programs in place to address salt reduction, which have a heavy emphasis on the reformulation of foods, nutrition labeling, developing clear daily intake targets and developing strategies to change consumer behavior.^{6,10} Policy change is a good first step, but what this overlooks is the response from the consumer and their views and voices.⁸ If the consumer is not engaged and does not have a voice in the decision-making process, then any policy change will fall on deaf ears. Consumers need to be engaged at earlier stages of the policy development process. “Co-design and participatory approaches and tools can help to facilitate the involvement of all stakeholders, including, and especially, consumers in the design and implementation of salt reduction strategies.”⁸

Within the Americas, awareness of the association between salt and hypertension is mixed. However, strategies that focus on reducing discretionary salt usage through consumer-led initiatives seem to be a best buy.^{2,3} Within this consumer-led approach, a blanket strategy should be avoided, and careful attention should be given to the selection of specific behaviors, target group segmentation and research with the priority population.^{5,11} Social marketing, which uses marketing prin-

ciples to influence behavior to promote social good, encompasses the key components of a consumer-led approach.¹² It considers the needs and wants of a group of people and then develops a program, policy or intervention that satisfies their wants and needs.^{12,13}

Social marketing was selected as a strategy to combat excessive sodium consumption by the Pan American Health Organization for Latin America and the Caribbean.¹⁴ With funding from the International Development Research Centre, a project entitled ‘Scaling and evaluating policies and programs for the reduction of salt in Latin America’ was implemented between 2016 and 2019. This project brought together a broad-based coalition consisting of governmental agencies, nongovernmental organizations, researchers, public health practitioners and regional stakeholders from four countries in Latin America (Brazil, Costa Rica, Paraguay and Peru), along with the University of South Florida and the World Health Organization Collaborating Center on Social Marketing and Social Change (USF WHO CC). The USF WHO CC designed and implemented a series of training and technical assistance activities to support the research teams from the four countries in developing a social marketing strategy to tackle excessive salt consumption in their local context (Figure 1). The information that follows highlights the steps of the process that the WHO CC used, along with some of the key deliverables from the process.

Building capacity

Building capacity among community researchers and practitioners on how to use social marketing to promote positive behavior change is likely to produce more effective campaigns than more traditional ‘top-down’ or ‘expert-led’ interventions. As a result, the initial phases of the project consisted of building up the skills of the country partners in understanding social marketing and applying what they learned to salt reduction efforts. We accomplished this by developing and implementing a virtual, online course on social marketing, coupled with an in-person workshop. The course consisted of eight online modules, and participants met with researchers at the USF WHO CC biweekly to identify barriers to salt reduction, population segments and initial methods for formative research.

“Building social marketing capacity is likely to produce more effective campaigns than more traditional ‘top-down’ or ‘expert-led’ interventions”

FIGURE 1: Training and technical assistance activities roadmap





Researchers and practitioners from Latin America, along with the University of South Florida and the World Health Organization Collaborating Center researchers and representatives of the Pan American Health Organization



Persona or archetype of the priority population created by the team from Costa Rica

Following the online course, an in-person workshop was hosted, during which a behavioral focus was selected, the target population identified and a formative research plan developed.

Formative research

Researchers from the four countries conducted formative research with the priority population using focus groups, individual interviews, surveys and journey mapping. Questions elicited information on: the perceived benefits of, and barriers to, salt reduction; knowledge, beliefs and current behaviors related to salt consumption; and information pertaining to the location where the target population engages in the behavior and how they wish to receive information. Following data collection, an online course on data analysis was created to guide the researchers in analyzing the data using a social marketing lens, and in synthesizing the results to inform strategy development.

Formative research findings included: a low-risk perception of salt use in the household, confusion as to whether salt is healthy or unhealthy, lack of awareness of how much salt to use, how to read labels, use of salt as the main condiment, reliance on prepackaged or processed foods, and resistance to changing personal behavior because of tradition and also lack of time.

Creative strategy development

Research findings and insights were discussed virtually and at an in-person workshop. This workshop was unique in that it pulled together researchers and creative professionals (copy

writers, graphic artists and public relations professionals) and engaged them in a dialogue about how to translate the research findings into concepts that would influence and be appealing to the priority population. The participants used the formative research results to narrow the behavior from reducing household consumption of salt, to reducing salt during cooking by substituting new ingredients. They delineated behavioral insights that demonstrated the association between salt and taste, tradition and showing love, and the association of no salt or low salt with the appearance of being sick. Finally, they used this work to develop regional creative concepts.

Work from this training and technical assistance project resulted in a regional social marketing and communication plan.¹⁵ As the plan is meant to apply regionally, the country teams are adapting it to fit their local context and are now starting on the implementation and evaluation.



Researchers sitting together with creative professionals to translate research findings into creative concepts



This example concept, created to guide the social marketing strategy, highlights the idea of how a caregiver expresses love through the act of cooking and how there is a lack of understanding regarding how much salt to use¹⁵

This project has been successful in creating capacity within four Latin American countries to conduct social marketing research and plan interventions using it. The countries are empowered to use social marketing to address other public health issues and are knowledgeable about how to ensure the consumer voice is heard in the design and implementation of policy.

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Community Brand for Behavior Change

Reducing obesity and tobacco use on one of the world's remotest islands

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Key messages

- > Taking a community-based marketing approach encouraged the local community to take ownership of the brand and subsequent behavior changes.
- > Understanding what residents loved most about living on the island helped to develop a brand that resonated and motivated.
- > The brand was accompanied by a range of strategies that enabled and supported positive behavior changes and the creation of a new social norm.

Introduction and country context

The island of St Helena is located in the South Atlantic Ocean and has a population of 4,534. St Helena is classified as a developing economy by the United Nations Conference on Trade and Development (UNCTADSTAT).¹ Local data indicate that more than one-fifth of the resident population are diabetic, that over 40 percent of registered patients have been assessed as hypertensive, and that up to 7 in 10 people are overweight or obese. Food and other imports reach the island mainly by freight ship from Cape Town, South Africa. The schedule is every 6 weeks.

Occasional disruption to the schedule or missed scheduling with ships that come to South Africa from the UK can often lead to significant supply shortages. Local food production is currently limited in nature and volume. Tobacco use is high, at 24.2 percent for men and women over 15 years; usage is particularly high among young men (50 percent) and women (46 percent) aged 20–29 years.²

“Community-directed social change is about spurring action by a community, for that community”

Taking a community-based social marketing approach

To support the development of a brand and help inform the development of a Health Promotion Strategic Framework (2018), a community-based prevention marketing approach was taken.³ Community-based prevention marketing is a community-directed social change process that applies marketing theories and techniques to the design, implementation and evaluation of health promotion and disease prevention programs.⁴ It is about working with the local communities as partners and active participants, thereby spurring action *by* a community, *for* that community.

Community-based prevention marketing focuses on developing a range of interventions (as opposed to focusing merely on advertising and communications). It addresses questions such as:

1. Whether any products or services need to be developed to *support* the desired behavior change.
2. Whether the physical environment (*design*) requires changing in any way to support the desired behavior change.
3. What are the *information and educational* needs of the target audience in relation to the desired behavior change.

4. Whether *control* can be used to incentivize the desired behavior change, or to disincentivize it. An example of control used in this way is smoke-free legislation.

The aims of the project were to:

- > reduce the consumption of high-sugar drinks, as well as high-fat, high-salt and high-sugar snack foods;
- > increase the 'swapping' of healthier food and drink options to replace the less healthy ones;
- > increase the number of smokers trying to quit; and
- > increase physical activity participation across the population.

Formative research findings

To support the development of the brand and to help inform the behavior change activities, formative research was conducted with representatives from the local population as well as key stakeholders. After the formative research had been conducted and analyzed, several interventions and brand ideas emerged. These were then presented at eight co-production workshops with local residents. Residents then supported the research team to refine and develop the ideas further.

In total, 87 residents were interviewed and involved in the co-production workshops, plus 17 stakeholders and frontline staff. Most of the local residents were female (60 percent). The age of the participants ranged from 11 to 61 years, and the average was 24 years.

Current knowledge

Most participants said they knew what a healthy diet and lifestyle looked like, even if they did not practice it themselves. This knowledge was irrespective of age or gender, and all the young people interviewed from the school also clearly articulated what a healthy diet and lifestyle involved.

“Participants alluded to the perceived scarcity of food as a reason for such large portion sizes and reliance on ‘too many carbs’”

When asked why people on the island may struggle with their own diets, they alluded to the perceived scarcity of food as a reason for such large portion sizes and reliance on ‘too many carbs.’ The older participants were asked about how health behaviors

have changed in the past 10 years. Many said knowledge concerning healthy diets and lifestyles has not changed, but people eat a poorer diet now because of the lack of access to fresh foods and an influx of inexpensive, unhealthy alternatives.

“I think well one of the main reasons for this generation [being unhealthy] is you can’t get the stuff. I think we’re more aware now that they have to eat this and have to eat that but there’s hardly ever stuff to eat on here.”

Additionally, people – especially young people – spend more time watching TV, playing video games or otherwise absorbed in their technology than they did a decade ago.

Perceptions concerning diabetes and cancer

Many participants, of all ages, said without being prompted that they were worried about their health or about developing diabetes. Despite their fear, participants appeared to push the prospect of diabetes to the back of their mind, and there was a sense of fatalism. This fatalism was brought about by participants thinking it was ‘in their genes.’ However, at the same time, all of the participants felt that the risk of developing diabetes was something they could mitigate with a healthy diet and lifestyle.

“Well, you know, my grannies and stuff got diabetes. Nanny died of diabetes but, you know, she said that she inherited it from her mum so my mum ain’t got it so like it is ... I thought, okay, if my mummy not got it maybe it will skip me but then I got as well so if it skipped me then ... But you’ve got to watch your lifestyles.”

Barriers to a healthy lifestyle

Many of the participants, when asked about the causes of obesity, talked about the lack of fruit and vegetables, unprompted. This was often given as the main reason for the high obesity rates on the island. In addition to the scarcity of fresh foods, many participants also mentioned cost as a barrier to eating healthily. They said it was cheaper to buy less nutritious foods than healthy ingredients.

“For me it is also here on the island, to be able to live healthier it costs much more, so the health food you have to pay like 20 percent through a customs board, whereas the junk food you pay 5 percent, where it should be the opposite way around.”

Lastly, some participants discussed that the culture on the island is to just ‘accept their fate’ instead of working to prevent chronic illness in the future.

“I think it’s a way of life here. It’s just a mentality. It’s a thing of ... I always say, and I always say to my colleagues as well, I do find Saints [i.e., inhabitants of St Helena] are extremely submissive and they always find me very domineering, perhaps I think but it’s just because I think where I come from you have to learn to speak up for yourself.”

Smokers and nonsmokers said they believed that smoking on the island was ‘too easy’ – being relatively inexpensive and socially ubiquitous. These factors were seen to make initiation easy and quitting difficult, and Saints who had worked elsewhere commented on what they perceived as the ease of smoking on St Helena relative to other countries and neighboring islands.

“I lived in the UK ... You don’t smoke there, you can’t afford to smoke there! But here it’s cheap.”

Island life

When asked what they liked the most about living on the island, all participants said ‘freedom.’ This had many meanings. First, they enjoyed the freedom of safety and security. They said they could go out without locking their doors and windows at night, and they could let their children play without supervision. Freedom also referred to ‘freedom from the rat race’ and the fast-paced lifestyle of other places, such as the UK. Participants said they had a more balanced lifestyle on the island than when they lived in other places.

“You know, it’s quite safe here and you do whatever so it is that as well, yeah. But then the children are free here.”

Other words that came up were ‘contentment,’ ‘tranquility’ and ‘community spirit.’

In terms of messaging and activities around staying healthy, many of the participants enjoyed doing such activities with family, friends and/or colleagues. They felt that it then became a more social event and that they could motivate each other. Most of the participants liked the idea of having group competitions to spur people on – trying as a team to drink more water or to do a set number of steps in a week.

Trusted sources

Participants said they would trust doctors, dieticians and family members when it came to health information and education. However, some of the participants felt they would trust someone who had successfully lost weight.

“Because they see, okay, they see [person’s name] as oh

she’s good. You know, she boosts herself up, pull her socks up and I’ve got to do this.”

Many of the participants felt that it was difficult to take health advice seriously if it came from someone who did ‘not look’ healthy themselves. They felt that some of the healthcare professionals on the island could not be ‘taken seriously’ because of their own lifestyle choices.

“I don’t know ... you know, when they are telling you do eat healthier and you are looking at them [the healthcare professional] ... it’s ... how can you take it seriously?”

Development of a community brand and strategic framework

Based on the findings, a community-focused brand was developed and acted as an umbrella brand for the strategic framework and behavior change activities. The brand was launched first (in May 2018), with all the other strategies coming under the brand and supporting the behavior change messages. As depicted in **Figure 1**, the brand name was ‘Saints Together’ – and campaign-specific sub-brands included ‘Saints active Together’ and ‘Saints smoke-free Together.’ The positioning of the brand was that Saints Together gives you the ultimate freedom

FIGURE 1: The ‘Saints Together’ brand



FIGURE 2: Poster with testimonial

– everywhere you see the brand is an opportunity to make a change to be ‘free’ from health problems and enjoy life on the island.

The brand promise was that small changes can make big differences and that everyone is making changes – Government, businesses and local communities. The branding was used as a stand-alone brand, as opposed to being coupled with other health or Government branding on the island. This was to help residents to take brand ownership. All the materials used testimonial-style wording in quotation marks, to make readers feel that another Saint is speaking directly to them, telling them how they have benefited from making the change (Figure 2).

Saints telling their own stories and speaking from personal experience featured in local media, including press, radio and social media. The application of the marketing linked directly to a range of behavior change interventions within the Health Promotion Strategic Framework⁵ that entailed environmental modifications to encourage a positive behavior or discourage a health-damaging one. For example, in parallel with partnership work with importing retailers aimed at improving the supply of healthier drinks options, ‘nudge marketing’ was provided to

help stores encourage customers to identify, and swap over to, healthier options. Marketing encouraging Government employees to fit more activity into their day was directly linked to the granting of 30 minutes ‘activity time’ per week that employees could opt to use. Marketing encouraging Saints to quit smoking was linked to the development of smoking cessation support and the creation of smoke-free public sites.

“Between April 2018 and May 2019, risk factors related to overweight and smoking had moved in a positive direction”

Discussion

The Saints Together branding was employed to support the full range of strategies in the Health Promotion Strategic Framework during 2018–2019. Evaluation of the framework using population survey data indicated that, between April 2018 and May 2019, risk factors related to overweight and smoking had moved in a positive direction.⁶ The social marketing approach was an embedded aspect of the wider Health Promotion Strategic Framework, and it is difficult to disentangle the role of the branding and marketing from the strategies to make the environment more supportive of healthier behaviors.

Nonetheless, in the 2019 survey, 72 percent of respondents said they were aware of the Saints Together campaign, indicating strong brand visibility and awareness among respondents. Of those who were aware, the majority (59 percent) believed that the campaign had helped to increase community awareness regarding health. Notably, community, media and policymaker discussions around aspects of the Health Promotion Strategic Framework that did not themselves directly use or reflect the brand – discussions relating to sugar taxation or tobacco legislation, for example – also referred to Saints Together, suggesting that the campaign was viewed as integral to the wider health strategy.

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Promoting Maternal and Child Health through Beauty Parlors in Afghanistan

An approach to address malnutrition and other preventable diseases

Soumitra Ghosh

Abt Associates Inc. Rockville, MD, USA

Key messages

- > Beauty parlors are used successfully in Africa for family planning promotion and HIV prevention activities¹ and in the USA to prevent noncommunicable diseases.²
- > The sense of comfort about discussing family health issues and the opportunity for follow-up conversations make parlors a uniquely safe space for women to address a variety of maternal and child health issues including malnutrition.
- > Trained, motivated and socially rewarded parlor owners make the intervention financially sustainable.
- > Integrated through a referral network of trained private providers and pharmacies, parlors can effectively mobilize clients.
- > Though parlor clients are on average wealthier and more educated than the overall population, myths and misconceptions are pervasive and continue to hinder healthy behaviors across wealth quintiles.

Background and context

Afghanistan suffers from some of the world's worst health outcomes, brought about by decades of war and insecurity. One in every 18 children dies before their fifth birthday, and one in every 77 live births results in maternal death.³ Access to life-saving health information, services and commodities is particularly chal-

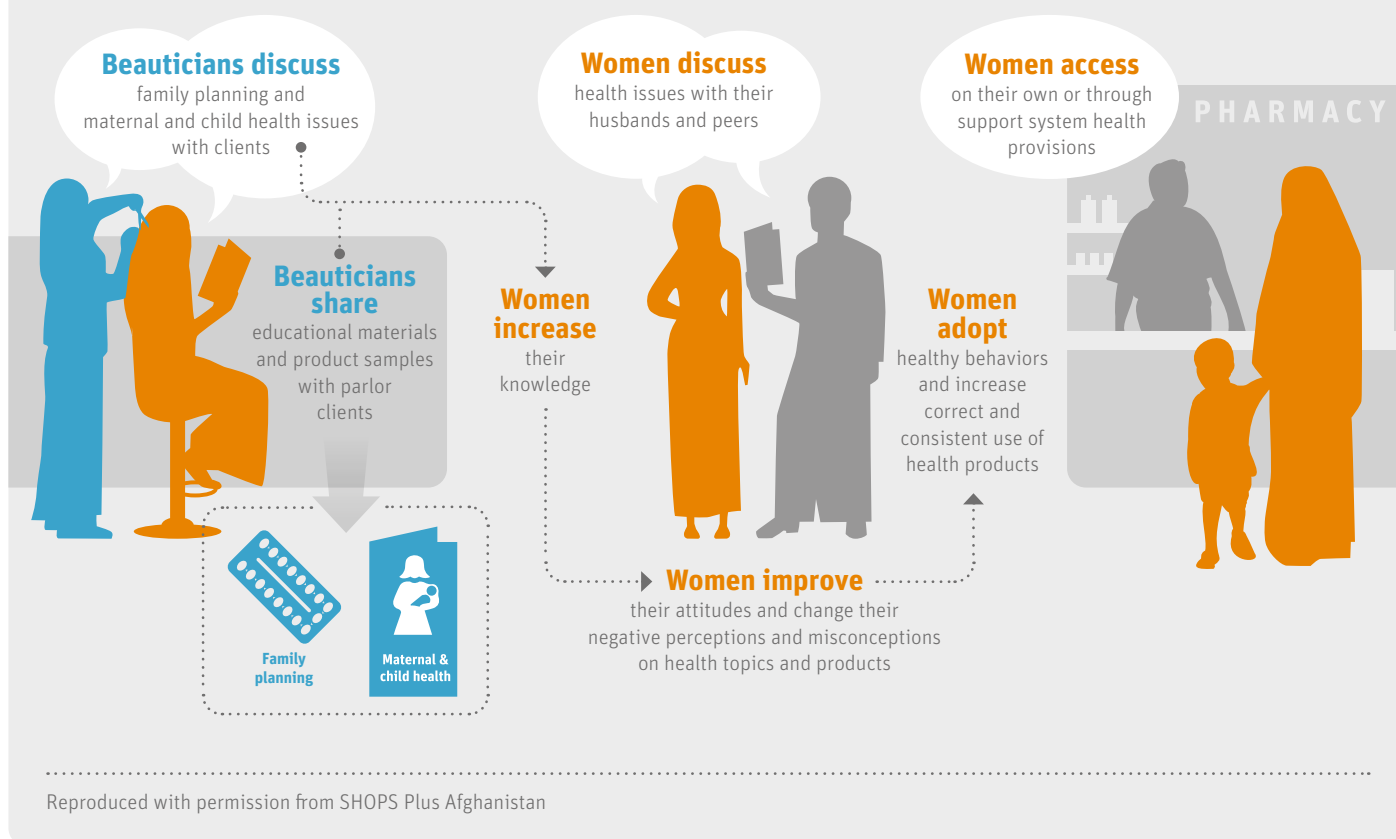
lenging for women whose mobility and autonomy are restricted by sociocultural factors.² While unidirectional mass media campaigns can reach Afghan women with information on health, there are limited opportunities for women to engage in interpersonal communication on topics such as family planning and maternal and child health. This lack of opportunity and ability to seek and exchange information perpetuates myths and misconceptions regarding life-saving health products and practices.

“The lack of opportunity to exchange information perpetuates myths and misconceptions regarding life-saving health products and practices”



A client in conversation with a beautician about priority health products

© Naimat Rawan

FIGURE 1: An innovative approach to reach Afghan women with health information

Sustaining Health Outcomes through the Private Sector (SHOPS) Plus, USAID's flagship initiative in private-sector health, is implementing an innovative intervention in Kabul to train 200 beauty parlor staff to deliver information to female clients on key, often-stigmatized health topics. Beauty parlors – of which there are over 10,000 nationwide – represent a unique space in Afghanistan, as they are one of the few places where women can freely gather and exchange information. By leveraging these safe spaces, the intervention aimed to transform parlor staff into community-level change agents trained to begin conversations and share educational materials with clients on family planning and maternal and child health. The intervention intended to encourage open dialogue (including with partners, friends and family) and transform negative attitudes. The ultimate goal was to promote healthy practices and empower women to become effective advocates for both their own and their children's health (see [Figure 1](#)).

Formative research to inform messaging and implementation

SHOPS Plus conducted a mixed-methods research study with a randomized controlled trial design to: (1) inform intervention messaging and approach, (2) improve implementation, and (3)

evaluate impact. This report focuses on results from the first phase of the study, during which the SHOPS Plus team conducted a quantitative survey with beauty parlor clients to assess their current knowledge, attitudes and practices related to family planning and maternal and child health. The study also involved qualitative focus group discussions and in-depth interviews among parlor staff and owners to help programmers develop appropriate messages and implementation strategies. The research team surveyed 530 married beauty parlor clients aged 18 to 49; they also conducted six focus group discussions and 15 in-depth interviews among staff and owners from 135 parlors in Kabul.

Demographics, household dynamics and grooming habits of parlor-goers

The average respondent was 30 years old and had three children. Over half (58 percent) of respondents had received a secondary education or higher, indicating that the sample was more highly educated than the average female population in Kabul.⁴ More than half of the clients (56 percent) reported making healthcare decisions jointly with their husbands, while one in five reported that her husband alone made healthcare decisions for his wife and children. The survey found that respondents visited a



© Naimat Rawan

Woman with child in Kabul

beauty parlor quite frequently – once every 10 days – and that they spent an average of 2 hours there each visit. More than 80 percent of the clients felt comfortable discussing their own and their children's health with their beautician. These findings demonstrated the promise and feasibility of the intervention in Afghanistan and similar countries.

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“More than 80 percent of clients felt comfortable discussing their own and their children's health with their beautician”

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KAP of under-5 diarrhea

Fifty-seven percent of respondents have at least one child under 5, and 36 percent of children under 5 had experienced diarrhea during the past 4 weeks. While nearly all caregivers (95 percent) were aware of oral rehydration salts (ORS), just two-thirds (69 percent) had heard of zinc. Nearly two-thirds (64 percent) of clients with sick children gave them ORS, but only 15 percent gave them ORS and zinc. Furthermore, 56 percent

gave their sick child an antibiotic, antidiarrheal or antiprotozoal. When differences in perceptions and knowledge were compared between respondents who had used and not used a combination of ORS and zinc, it was found that non-zinc users have significantly less knowledge of zinc and its effectiveness.

Implications

The parlor staff should emphasize the ORS and zinc co-pack as the top-recommended treatment. The findings indicate that there is an opportunity to leverage relatively high ORS use to increase demand for the co-pack, which is cost-efficient and convenient.

In addition, given the high antibiotic, antidiarrheal and antiprotozoal use, staff should heighten awareness of the perceived risks of these potentially harmful treatments so that caregivers gain knowledge of how to seek out appropriate diarrhea treatments.

KAP of household water treatment solution for disinfection

Among respondents with a child under 5, more than one in four (26 percent) do not treat their water, and 60 percent say that water that looks clean is safe to drink. Awareness and knowledge of where to purchase chlorine is high, but several barriers existed to chlorine use – for instance, bad taste.

Implications

Parlor staff should focus on increasing the threat perception of untreated water. It is important to draw a direct link between the consumption of untreated water and negative health outcomes, including diarrhea.

KAP of iron folate acid tablets to prevent and treat anemia

The incidence of anemia among women in Afghanistan is high, and the survey found that awareness of, and access, to iron folate is very high (over 90 percent). However, 26 percent of respondents did not use iron folate during their last pregnancy.

Implications

Parlor staff should focus on educating women who did not take iron folate tablets during their last pregnancy and also clients who are planning to become pregnant about the benefits of iron and folic acid during pregnancy.

KAP of short-acting modern methods of contraception

Fifty-six percent of respondents use a contraceptive method, and 46 percent use a modern method. The analysis of contraceptive knowledge, beliefs and attitudes revealed traditional and nonusers were more likely to report shopkeeper stigma when purchasing a family planning method, and less likely to

report that their husbands approve of modern contraceptive use. Analysis also indicated that fears of infertility and bodily harm would be likely barriers to contraceptive uptake (see graph in [Figure 2](#)).

Implications

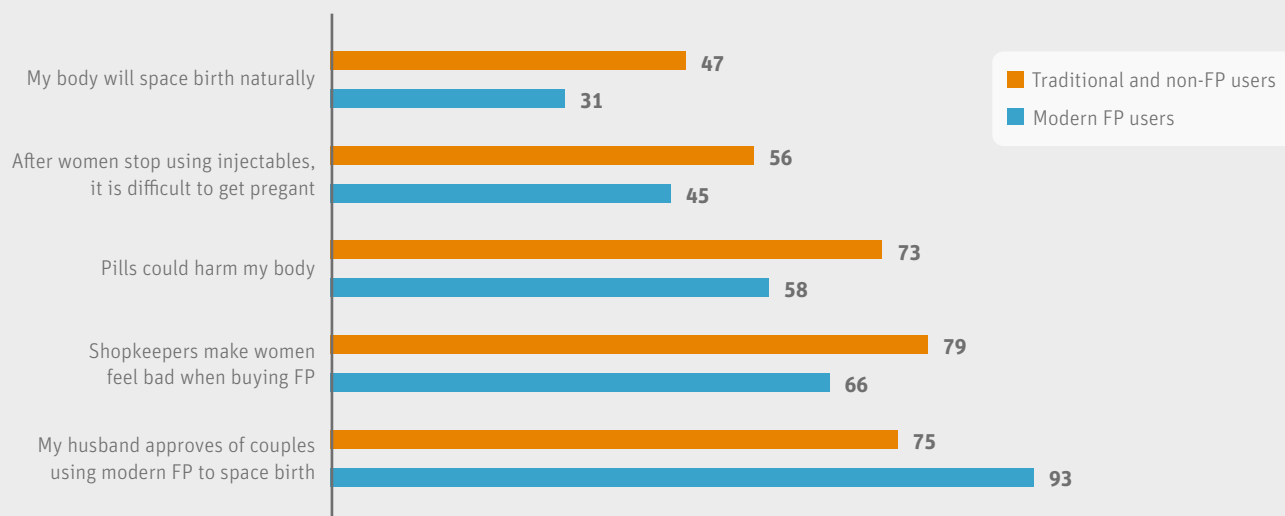
One opportunity to help women meet their reproductive intentions is to encourage them to discuss this with their husbands and engage them in family planning decisions. Parlor staff can help women initiate dialogue about family planning with their partners.

Furthermore, to address shopkeeper stigma, beauty parlor staff can begin by talking with clients about their experiences of purchasing contraception from a male shopkeeper and can share strategies to break down the stigma and increase women's confidence when purchasing contraception. This approach can be supported by SHOPS Plus sales staff sensitizing shopkeepers and pharmacists in intervention areas in order to reduce negative interactions.

Additionally, to address fears of infertility and bodily harm, parlor staff should communicate the reversibility of hormonal methods, discuss their side effects, and distinguish between real, temporary side effects and inaccurate myths about permanent harm.

FIGURE 2: Possible barriers to contraceptive use among traditional and nonusers

Percent who agree with each statement by type of users (among all respondents)



Modern family planning (FP) users $n = 151$; traditional and non-FP users $n = 311$
 All of the differences between users and nonusers are statistically significant ($P < 0.05$)

Reproduced with permission from SHOPS Plus Afghanistan

Lastly, beauty parlor communications should discuss the importance of birth spacing to protect both the mother's and the baby's health and to improve the family's wellbeing, which is critical messaging in high maternal and child mortality settings. Nearly half of traditional and nonusers believe that their body will space births naturally, so providing accurate information on spacing, including the timing of the return to fertility after giving birth and breastfeeding, is key to increasing contraceptive use.

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“This approach promises to positively impact the lives of Afghan women”

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Conclusions

Findings from the formative study and the qualitative focus group discussions among the parlor staff and owners, as well as the clients, suggest that this approach promises to positively impact the lives of Afghan women. The approach promises to create new and safe platforms that will enable women to engage in discussions about important health information. This information can include encouraging women to adopt proven practices to protect their children from preventable diseases, including nutritional deficiency diseases, by promoting micronutrients, and increasing their understanding about the benefits of modern contraception for birth spacing and healthy future pregnancies.

Trained parlors, if connected with a referral network of trained private providers, pharmacies and other health workers operating in the intervention areas, can mobilize clients to speed up the pace of behavior change.

Furthermore, in addition to providing training, supportive supervision, promotional support and social rewards, innovative, nonfinancial incentives – such as business management capacity building for the parlor owners – can improve buy-in and long-term motivation among parlor owners and help them achieve financial sustainability.

Last but not least, though parlor clients are relatively wealthier and more educated than the overall population, misinformation, misperceptions and negative attitudes are pervasive and continue to hinder healthy behavior in Afghanistan. If used strategically, the parlors or similar interventions have the potential to make a positive impact on the population's overall health status.

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In Conversation with Women

Tamsen de Beer, Pippa Yeats
Praekelt.org, Cape Town, South Africa

Key messages

- > MomConnect is the mobile-phone-based maternal health program of the National Department of Health in South Africa.
- > MomConnect has been linked to improved health behaviors among women, and is characterized by constant technical innovation driven by the changing needs and habits of its users.
- > A multidisciplinary team of service designers, data scientists and engineers use human-centered design processes to manage the program's expansion and growth.

South Africa's national maternal health program MomConnect turned five in August 2019. Its design evolved from a searchable mobile web prototype to weekly SMS push messages and a Helpdesk, and then to a conversational WhatsApp service. Each step in this technical evolution was driven by the hunger for health information of the 2.7 million women who have used the service: through pregnancy, up to baby's first birthday, then the second birthday. MomConnect shows how a product rooted in human-centered design can – and must – remain as curious and flexible as the population it was built to support.

“MomConnect shows how a product rooted in human-centered design can remain as curious and flexible as the population it was built to support”

In partnership with Praekelt, the National Department of Health led a consortium of academics, funders, stakeholders,¹ nongovernmental organizations and maternal health experts to

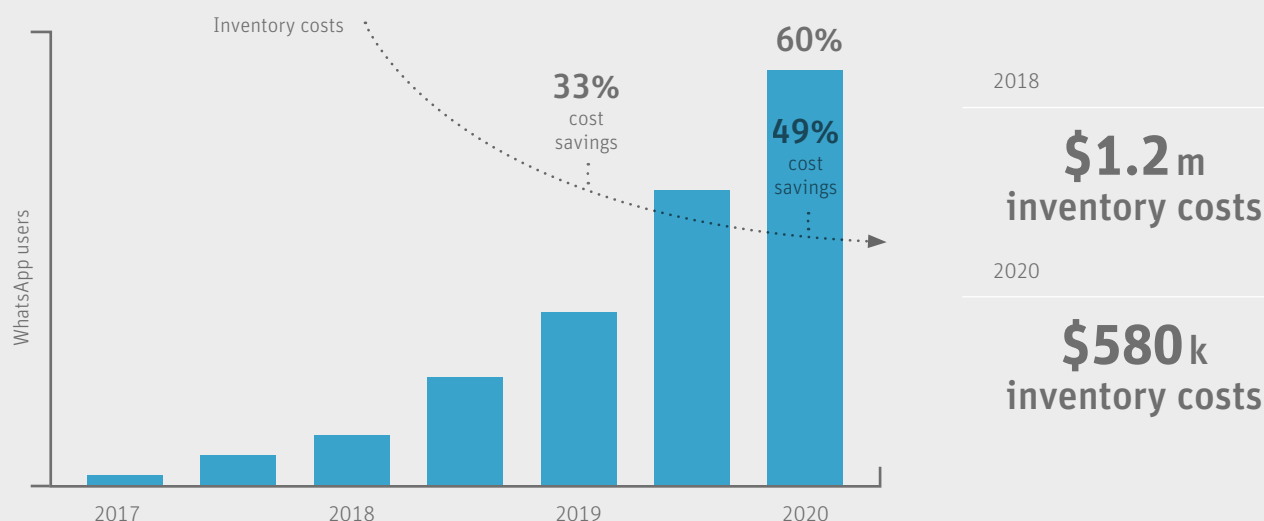


Mothers consult MomConnect messages during a postnatal checkup at a health facility in Khayelitsha, Cape Town

launch MomConnect in 2014, which delivered 2–3 weekly SMS messages at no cost to its users. Free access has been a consistent aspect of MomConnect, as the South African mothers who use it live on less than US\$5 per day.

MomConnect was built on evidence-based insights, and messages were based on those developed in 2013 for its predecessor, AskMAMA South Africa – a mobile website that demonstrated improved health-seeking behavior² and attracted 170,000 new users during the first 6 weeks.³ High-comment volumes on AskMAMA's localized articles on HIV, intimate partner violence and single parenting revealed key insights into content localization, and a weekly live chat was popular. This ‘talkback’ aspect of AskMAMA was incorporated into MomConnect's design with the addition of a Helpdesk service, so that users could ask questions as well as receive essential health information.

MomConnect follows a stage-based design and delivers time-sensitive health prompts and clinic visit reminders. It rephrases the health system's ‘doctor's orders’ into helpful advice that boosts a woman's confidence and makes her feel cared for. MomConnect ‘speaks’ all of South Africa's 11 official languages, using the relatable persona and friendly voice of a clinic nurse. It was designed for low-end feature phones as well as high-end smartphones. Messages follow each woman's specific pregnancy stage and reflect the lived context of a range of women – from high-density urban townships where mothers might have two smartphones, to rural villages where a basic feature phone

FIGURE 1: As mothers switch to WhatsApp as their health-messaging channel of choice, so program costs decrease over time

might be shared by a family and getting a network signal might require hiking up a hill.

“MomConnect rephrases the health system’s ‘doctor’s orders’ into helpful advice that boosts a woman’s confidence and makes her feel cared for”

Feedback from the women who use MomConnect has guided a series of service improvements. Mothers say they feel empowered by their messages.⁴ An HIV-positive user said that messag-

es helped her to start tough conversations about HIV prevention with her husband: “When the messages for [this service] comes I read them to him ... I explain to him saying, ‘You see, they say even you as the father must also test so that we do not infect the child ...’” A user from KwaZulu-Natal said: “I’d like to encourage the MomConnect program – it needs to go further because it will help many more people.”

MomConnect did go further: weekly message delivery now extends to babies’ first 1,000 days, and there are plans to increase this to cover the first 5 years in due course. Going further still took service designers right into the health system’s busy clinics and hospitals where patient queues snake out of the door. Here we found that helping mothers meant helping their helpers. We learned that healthcare workers and nurses are vulnerable to stress, exhaustion and mental health challenges. Feedback gathered during workshops with nurses revealed their interest in practical information on self-care. One nurse said: “Nurses are strong people, but there are some times we can’t cope.” To address this, a sister program for the National Department of Health, called NurseConnect, was launched in 2016, which has a strong psychosocial thrust.

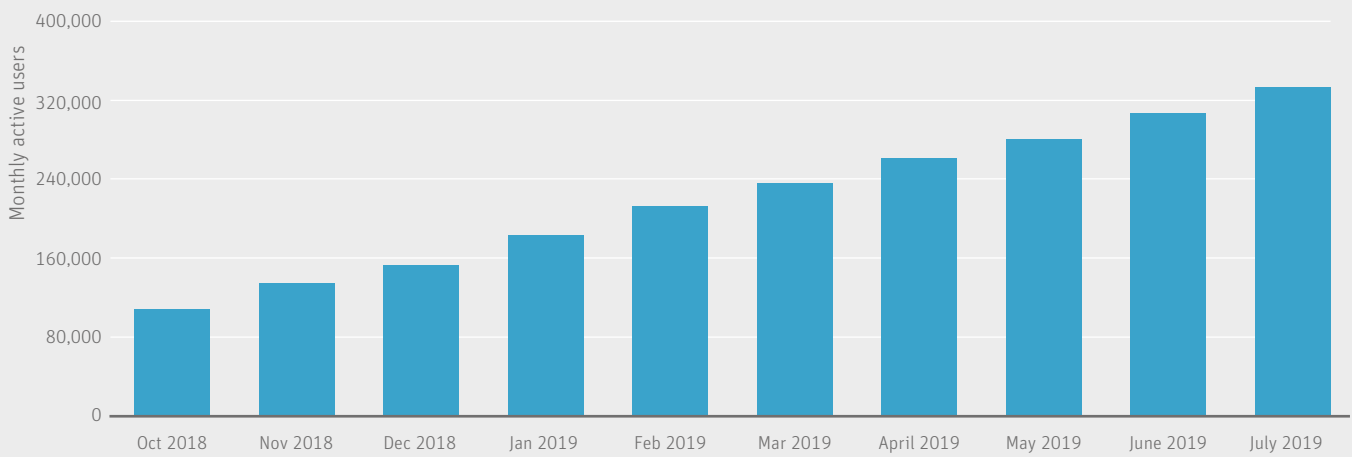
Then, towards the end of 2017, the cost of sending weekly SMS messages to almost 1 million MomConnect moms became prohibitive. Praekelt had just negotiated access to the WhatsApp Business Application Programming Interface, which allows our technology to communicate directly with WhatsApp infrastructure. Because 83 percent of South Africans use WhatsApp (compared with 51 percent on SMS),⁵ we decided to turn this challenge into an opportunity. We realized we could test users’ willingness to use their data to share costs with the program, while also probing their interest in richer content (Figure 1).



A health worker stands among patients queuing for postnatal care at a health facility in Khayelitsha, Cape Town

FIGURE 2: Forty-nine percent of MomConnect users are on WhatsApp, and they are responsible for 90 percent of the interactions with the Helpdesk

Now mothers are **10x more** likely to reach out to the MomConnect Helpdesk with their questions and there is **14% more** monthly engagement than with SMS



We conducted research to understand the WhatsApp landscape in South Africa. We conducted primary qualitative research with 20 mothers to thoroughly understand their perceptions of WhatsApp and how they use it, and drew on rich insights about mothers' contexts and health behaviors from previous primary research with 900 mothers, 40 health workers and 12 maternal health experts.

We verified the desirability of WhatsApp, particularly among younger mothers. Older mothers perceived WhatsApp as unreliable, complaining that without data "you don't get your messages." Even though we knew that 56 percent of our existing audience had registered for WhatsApp, this insight meant we couldn't switch mothers over automatically. We did not anticipate learning that mothers would want to have the ability to switch back to SMS from WhatsApp if they ran out of data midway through the month. Learning this, we knew it was essential that we build a self-service functionality into the overall design of the service so that users could switch between channels. We then designed a new registration process that allowed mothers to choose whether to receive their messages via SMS or WhatsApp. Next, we needed to understand how this worked in clinics.

Hundreds of mothers at 11 selected high-volume clinics were involved in A/B testing variations of the new registration process, and we conducted ethnographies in these clinics. Many

mothers responded, like Khutso Senyatsi, mother of two: "I love the WhatsApp messages from [the service], especially because it's very easy to identify it and since I spend time on WhatsApp and on my phone, I love the convenience it comes with."

Sam Dyantyi had recently given birth to a baby boy. She said: "The nurses registered me on WhatsApp and that's how I get MomConnect messages. I take them personal. They are for me, for my baby, so it's pretty cool. I prefer WhatsApp more than [SMS] messages."

"The nurses registered me on WhatsApp and that's how I get MomConnect messages. They are for me, for my baby, so it's pretty cool."

These trials revealed the extent of the women's appetite for information: engagement spiked at 4.6 messages sent by each WhatsApp user, compared with 1.8 messages sent by SMS users. To date, 49 percent of users are signed up to WhatsApp as their preferred channel. Their feedback alone now represents 90 percent of the conversations between mothers and the Helpdesk.

However, we had to understand how the increased volume of messages affected the productivity of the Helpdesk operators. After interviews and observations with the operators, we realized that if we went ahead with WhatsApp, we would need to explore how automation could better support them to handle this increased volume. More questions from mothers mean better training for the tools to support the Helpdesk operators, and we are currently working on a new product targeted at using machine learning to increase operator efficiency.

The engagement on the Helpdesk (Figure 2) is exactly what we were hoping for. Irene, a mother who has HIV, is now also a clinic lead and loves helping with the registration of mothers on WhatsApp. She said: “WhatsApp is great for [the service] because I’m able to send messages, ask questions, and I get the feedback from [the service]. It’s very much easier for us rather than sending an SMS ... You can ... ask more questions and get more answers.”

“It is our responsibility to ensure that the service continues to engage ever-more users while remaining financially sustainable”

To adapt the phrase to service design terminology: with scale comes great responsibility. As our maternal health platform now reaches 2.9 million mothers, it is our responsibility to ensure that the service continues to engage ever-more users while remaining financially sustainable. We were able to design a simple design solution for mothers who prefer WhatsApp and continue to deliver essential messages to the hardest-to-reach mothers using SMS. Not only was this a user-driven endeavor: the service

design process was implemented by a multidisciplinary team of service designers, content designers, data scientists, engineers and project managers. Our collaboration has brought about a significantly improved service and has a far greater impact on mothers and their families. It is through conversation with these women that we help them to solve their challenges.

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Gontse Mbelu (center, Praekelt.org service design lead at the time this photograph was taken) discusses new features developed to support operators of the MomConnect Helpdesk at the National Department of Health offices, Pretoria

Elevator Pitch Contest by *Sight and Life*

Accra, Ghana, 10–12 September 2019

Srujith Lingala, Nola Martin, Daniel Amanquah
Sight and Life, Basel, Switzerland

How can we nourish 9 billion people by 2050? With government programs underfunded, aid initiatives having limited reach and private-sector action leaving much to be desired, we need disruptive solutions to solve humanity's pressing issues. So, we pose these challenges to young innovators of the world through the Elevator Pitch Contest (EPC) by *Sight and Life*.

**“We need disruptive solutions
to solve humanity’s
pressing issues”**

Entrepreneurial life is tough. Investment funds are available, but the competition is harsh. Young students need to effectively articulate their idea in a manner that is persuasive and precise. The term ‘elevator pitch’ describes an imagined scenario in which an entrepreneur accidentally meets a potential investor in an elevator and has an opportunity to quickly ‘pitch’ his or her business concept. As Kalpana Beesabathuni of *Sight and Life* explains: “We designed the contest in such a way that it provides the tools for young scientists and engineers to communicate their unique ideas in a persuasive manner – in the time it takes to ride an elevator.”

Aspirational and affordable nutritious foods

Micronutrient malnutrition is highly prevalent and persistent among women in Ghana, where half of the women of reproductive age are folate-deficient, 40 percent are overweight and 20 percent are anemic. The country is experiencing a critical need for foods that are rich in micronutrients. The latest EPC by *Sight and Life* – held in partnership with OBAASIMA, McGill University and the Association of Ghana Industries – therefore sought disruptive ideas on the subject of aspirational and affordable nutritious foods.

The contest

This was *Sight and Life*’s first EPC designed specifically to encourage local solutions to local problems by locals. Open only to residents of Ghana, the contest drew 35 entries, submitted by students from six Ghanaian universities and by many young entrepreneurs. Applications ranged from innovative ideas to successful solutions that are already operating at scale, presenting the judges with no simple task as they sought to narrow down the 35 applicants to seven finalists. Our thanks go to the jury members, who shared their immense knowledge, experience and expertise in nutrition assessment:

> **Breda Gavin-Smith**, Global Public Health
Nutrition Manager, *Sight and Life*

> **Kwame Jantuah**, CEO, African Energy Consortium Ltd

> **Samuel Kwame Ntim Adu**, Founder and CEO,
Yedent Agro Group of Companies Ltd

“To see so many young, enthusiastic, ambassadors for nutrition was truly inspiring. So much passion, commitment and tenacity is required to get a nutritious product off the ground, and each of the finalists had these qualities. I have no doubt their innovations will be successful with appropriate support and mentoring, which are vital tools for young entrepreneurs.”

Breda Gavin-Smith, Elevator Pitch Contest judge



© Solomon Neequaye

Breda Gavin-Smith asks a finalist a question during the Q&A session in Accra, Ghana

The seven finalists were awarded a round trip to Accra, Ghana, to pitch their innovations at the Ghana Industrial Summit & Exhibition 2019. Before the competition, each finalist received extensive mentorship and feedback regarding their concept and presentation to help hone their pitch. The finalists worked with Parand Salmassinia, Global Vice President of Commercial Strategy and Key Accounts for DSM's Personal Care & Aroma Ingredients business, and Dr Nii Addy, Assistant Professor (Research) at McGill University's Institute for the Study of International Development, on their innovations, refining their pitches and improving their narratives during multiple group and individual sessions.

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"I greatly enjoyed serving as a mentor to the contestants. Their passion and dedication for their ventures was inspiring. One could see how much effort they had put into the overall work, including the pitches."

Nii Addy, Elevator Pitch Contest mentor

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The finalists also met with William Offori Appaw, a previous EPC finalist, who shared his entrepreneurial journey and the experience of participating in the 2018 EPC in Mumbai.

The winners

The third-place winner of the EPC was Ewura-Esi Manful from Kwame Nkrumah University of Science and Technology, with 'Sweetpot Yogurt' – a nutritious yogurt that aims to curb vitamin A deficiency while simultaneously providing a market for sweet potatoes. Sweetpot Yoghurt is naturally flavored and supplemented with vitamin A and dietary fibers, presenting consumers with a healthier snack choice.

The second-place winner was Grace A Twumasi, also from Kwame Nkrumah University of Science and Technology. She pitched an innovative, nutrient-dense food for children made completely from locally available raw materials such as orange-flesh sweet potato, millet and soya beans. Grace's innovation has already completed research trials at the Manhiya Children's Hospital in Kumasi, and is ready to be scaled up to the market.

The winner of the competition was Zeenatu Suglo Adams from Pneuma Food Scientifics, a startup that formulates affordable and nutritious snacks that taste great. Zeenatu pitched 'Yammy Pops,' a ready-to-eat extruded snack made from underutilized and highly nutritious crops (yam, tamarind and baobab). This snack is rich in vitamin C, dietary minerals, protein and fiber.



Grace A Twumasi receives the first runner-up award from Ing. Alfred D Sackeyfio, Director of Corporate Strategy, Volta River Authority



Front row, sixth from left: Joachim Asare (SPeCS Foods), with (left to right) Zeenatu Suglo Adams (Pneuma Food Scientifics), Grace A Twumasi (Sweepolac), Edith Kufoalor (Sosogin Tea), Seth Twum-Akwaboah (Association of Ghana Industries CEO), Ewura-Esi Manful (Sweetpot Yoghurt), John Attu (Nature Foods), Deborah Amoasi (Dietician App), along with other team members

Yammy Pops are similar to corn pops but because they are made from yams they will help to reduce dietary dependence on cereals and grains.

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“Initially it was not an easy task, but after many rehearsals and coaching by the EPC team, I managed to talk about my idea in five minutes. This activity helped me identify the key features needed for building a business. Passion alone is not enough. The facts and figures are very important.”

*Zeenatu Suglo Adams,
Elevator Pitch Contest winner*

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The other EPC finalists were:

Joachim Asare, SPeCS Foods

Muden is a nutritious, fermented cake made from cereals that are popular in Ghana, such as maize, millet, rice, soybean and sorghum. It can either be eaten on its own or added to cooked foods. The fermentation process enhances the development of micronutrients.

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Edith Kufoalor, Sosogin

Sosogin is an organic herbal tea made from locally grown hibiscus petals, bicolor sorghum grass, lemongrass and ginger. It contains nutrients that help digestion and prevent stomach ulcers, and it also contains anti-biofilm agents such as beta-carotene and lycopene.

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John Attu, Nature Foods

John Attu's submission was a yogurt made from fresh pasteurized cow's milk and locally sourced fruits. The product is rich in protein, calcium, vitamin D, vitamin B₁₂, riboflavin, phosphorus, magnesium, potassium and probiotics, which boost digestive health. The addition of fresh fruits improves the vitamin, mineral and fiber content of the product.

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Deborah Amoasi, Dietician App

The Dietician App is a mobile app with a database that lists the calorific content of all Ghanaian foods. The aim of the app is to be able to convert foods consumed into daily calories and

provide individual body mass index scores depending on height and weight. The EPC by *Sight and Life* brought together local entrepreneurs and provided an opportunity for them to connect and incubate their ideas. The seven finalists filled this contest with their cutting-edge ideas and passion. We are looking forward to bright futures for all of them.

This was *Sight and Life's* fourth EPC, the first three having been held in Cancun (2016, focusing on micronutrients), Boston (2018, seeking innovations in nutrition assessment) and Mumbai (2018, searching for ways to reduce aflatoxins). The next EPC will be held in Bangkok on 24 March 2020, and will focus on climate-smart nutrition. For more information on these exciting competitions, visit www.elevator-pitch-contest.org.

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Editor's note: This section contains reviews of books, whether brand new or classic, that we hope will be of interest to our readers.

Book Review

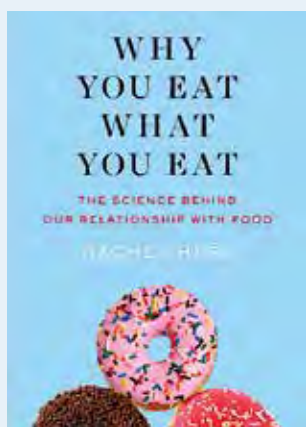
Seduced by a Burger (Again) Why You Eat What You Eat: The Science behind Our Relationship with Food

Rachel Herz

Publisher: WW Norton & Company, 2018

Language: English

ISBN: 978-0-393-24331-4



It is one of the most famous moments in literature; so famous that it acquired its own name. The first person ever to experience a 'Proustian moment' was the French author Marcel Proust himself.

Proust recounts it at the opening of his novel *À la Recherche du Temps Perdu*, translated variously as *Remembrance of Things Past* and *In Search of Lost Time*, which was published in seven volumes in the

years between 1913 and 1927.

One of the most remarkable aspects of this moment is that almost nothing happens in it. A young boy eats a cake, a '*petite madeleine*,' dipped in some tea. And yet the experience of the combined flavors has a permanently transformational effect on the narrator's sensibility as he recalls it to mind:

"... one day in winter, as I came home, my mother, seeing that I was cold, offered me some tea, a thing I did not ordinarily take. I declined at first, and then, for no particular reason, changed my mind. She sent out for one of those short, plump little cakes called '*petites madeleines*,' which look as though

they had been molded in the fluted scallop of a pilgrim's shell. And soon, mechanically, weary after a dull day with the prospect of a depressing morrow, I raised to my lips a spoonful of the tea in which I had soaked a morsel of the cake. No sooner had the warm liquid, and the crumbs with it, touched my palate than a shudder ran through my whole body, and I stopped, intent upon the extraordinary changes that were taking place. An exquisite pleasure had invaded my senses, but individual, detached, with no suggestion of its origin. And at once the vicissitudes of life had become indifferent to me, its disasters innocuous, its brevity illusory – this new sensation having had on me the effect which love has of filling me with a precious essence; or rather this essence was not in me, it was myself. I had ceased now to feel mediocre, accidental, mortal. Whence could it have come to me, this all-powerful joy? I was conscious that it was connected with the taste of tea and cake, but that it infinitely transcended those savors, could not, indeed, be of the same nature as theirs. Whence did it come? What did it signify? How could I seize upon and define it?"¹

If Proust provided a philosophical explanation of the 'madeleine moment,' Rachel Herz offers a scientific one in this remarkable book. "Scent brings back our most emotional and evocative memories," she writes, "and without a sense of smell we lose not only this unique experience but also pieces of ourselves. Proust wrote that in the years between the original event and tasting the madeleine, he had never recalled his childhood moments ... Aromas and flavors awaken facets of our lives that might otherwise be forever forgotten."²

Probably all of us are aware at some level of the link between aroma, flavor, emotion and memory, but how many of us know that the color of a plate can alter one's perception of the food presented on it? Or that the shape into which a food is cut will influence how sweet or savory it appears to taste? Or again, that the level of lighting in a restaurant has an impact on how quickly one eats?

The factors that influence every eating decision we make

This is a powerfully useful book. Writing with the panache of a popular journalist and the rigor of a scientific researcher, Herz explores the factors that influence every eating decision we make. Starting right at the beginning, she discusses the "fab



“Sadly, the failure rate of diets is a whopping 95 percent.”³

four” basic tastes of sweet, sour, salty and bitter, before going on to consider the role of fat and spice in making food appealing; the sense of smell and the action of aroma; various eating disorders, including avoidant/restrictive food intake disorder and anorexia; the influence of visual and auditory stimuli on the perception of food; and the various ways in which excessive food intake might be combatted.

“Pornography,” she writes, with typical directness, “is the number one most searched-for term on the Internet, and, according to the celebrity chef Jamie Oliver, ‘food’ is number two. Ironically, with today’s obsessive attachment to screens, we pay more attention to images of food than we do to the food we are eating. This state of affairs almost guarantees overconsumption, since staring at sumptuous high-calorie foods motivates us to want to eat more, while lack of attention to actual eating decreases our ability to monitor both intake and satisfaction.”⁴

That tightly packed concluding sentence gives a good impression of the insight and energy that inform every page of this remarkable work. Herz’s scrupulous analysis is always thought-provoking and frequently amusing; it is never moralistic or judgmental. She considers our relationship with food with curiosity and compassion, finding in every facet of it an aspect of the human condition. Referencing the French culinary connoisseur Jean Anthelme Brillat-Savarin (1755–1826), who famously observed, “Tell me what you eat and I will tell you who you are,” she concludes this cornucopia of a book with a paragraph that we should perhaps all copy out and stick on our fridges:

“Food nourishes the body and the soul, and knowing how to get the most from our senses and our mind while eating

makes it all that it can be. Food is an aesthetic, texture and design immersion, whether you turn a salad into a Kandinsky painting or not. Food connects us to our past, to other people, to the world, and to ourselves. Food is memory, celebration, identity, conversation, emotion, glory, pleasure, pain, fear, disgust, comfort, and guilt. Food is aromatic, salty, sour, bitter, savory, tingly, hot, and cold. Food is flavor and savor, art and sight, sound and music, texture and design, words and poetry, divine and decadent. Food is love and food is life. And knowledge of how our mind and body are affected by our food choices, and how our senses and psychology alter our experience of food and the consequences of eating, is power.”

.....
“Knowledge of how our mind and body are affected by our food choices, and how our senses and psychology alter our experience of food and the consequences of eating, is power”

Review by Jonathan Steffen

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- 03.** *Ibid.*, p. 110.
- 04.** *Ibid.*, pp. 265–66.

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