BEworks

Combating household food waste with behavioral economics in partnership with Hellmann's

Food waste: A global CO^2 emissions giant

Food waste is a global dilemma with immense and complex implications. A recent report released by the United Nations estimates that the typical resident of a high-income nation wastes an astonishing 174 lbs of food per year just in the home[1], as household waste tops the charts in terms of its contribution to food waste in both the developing and developed world.

The consequences are staggering[2,3] – as is the potential to reap the benefits of fixing the problem. In curbing food waste, we could reduce a carbon footprint that is larger than that produced by all of India - the 3rd highest CO2-emitting nation in the world[4]. Furthermore, researchers estimate that recovering just 30% of food wasted in the US - a developed country with marked wealth disparities – would be sufficient to feed every food-insecure resident on the nation[5].

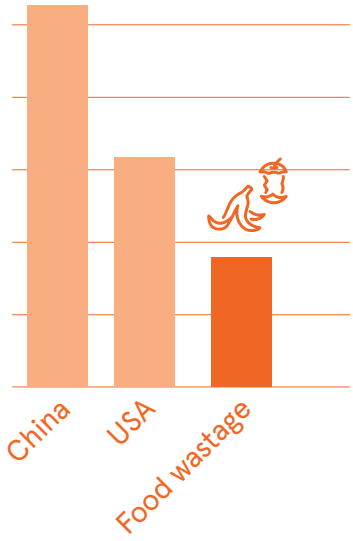
Understanding and solving this issue was the central mission of a collaboration BEworks recently completed with Hellmann's - a member of the Unilever brand family - who is tackling food waste as part of its commitment to the UN Sustainable Development Goals. Being the complex behavioral dilemma that food waste is, there is no better way to tackle it than using insights and methods from behavioral economics.

The BEworks team of behavioral economists and Hellmann's thus joined forces to work in partnership with leading circular economy NGO WRAP and behavioral strategy agency Marketing Mums. Our mission was to establish a scientific understanding of the psychological factors contributing to food waste - and to ultimately target them. Together, we proceeded to design and evaluate a set of behavioral interventions using a multi-phase randomized controlled trial strategy and to shed new light on effective tactics for driving more sustainable behaviors.

of food waste per year just in the home[1]

30% of food wasted in the US[1]

If food wastage were a country, it would be the third largest emitting country in the world



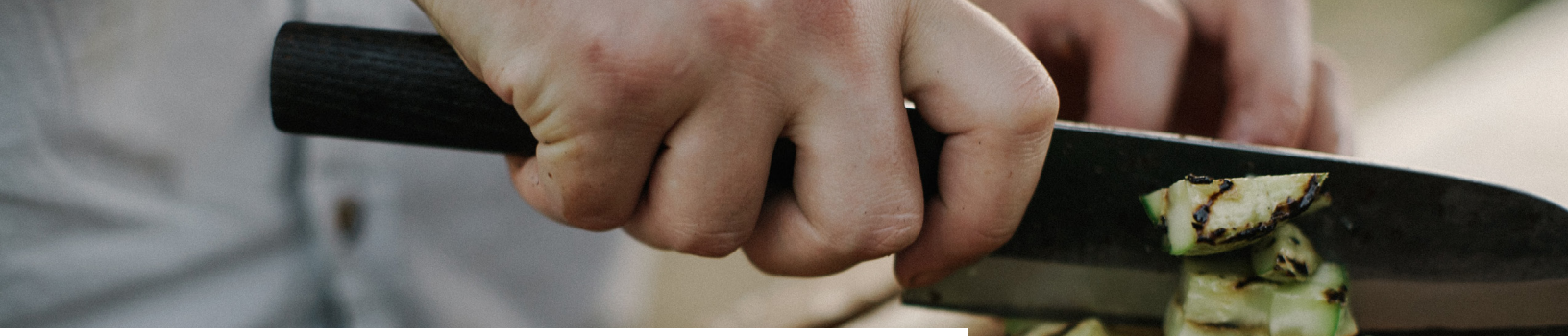
Successfully changing behavior requires us to understand the mechanics of the problem

Household waste is not a single act. It is a complex web of interconnected behaviors – from meal planning (or lack thereof) and impulsive purchasing to food storage and cooking habits. Knowing where to intervene in this complex behavior journey is not a trivial manner, as research studies struggle to agree on the most important contributors to waste[6–8]. Does the issue fundamentally come down to overbuying? Or incorrectly storing zucchinis in our cupboards only to find them rotten by next week?

To a consumer goods company set on tackling food waste, answering this question accurately is important. It can make the difference between investing in a project developed on false premises and thus unlikely to succeed, and an intervention that strikes the right link in the behavior chain and produces a genuine impact.

Identifying and targeting the practical behavioral contributors to food waste is all the more crucial given the challenges inherent in alternative approaches, such as those relying on convincing people to feel more personally invested in reducing food waste. Our own research tells us that people tend to think they already are less wasteful than the average person, and that the fact they compost their leftovers makes waste less problematic. This means we have our work cut out for us if we want to convince people to take more personal responsibility for curbing waste. Even if this mission were successful, targeting flawed beliefs and 'correcting' misinformed intentions may ultimately not pay off. Research has shown that even when people intend to change their habits, this rarely translates into action - a well-documented phenomenon known as the intention-action gap. Thus, in tackling household food waste, we set out to develop tactics oriented at crafting simple and effective behavior-targeted solutions.

The first goalpost of our behavior change program development was to determine the most crucial factors driving food waste, and to hone in on the most productive place to intervene in this behavioral journey. We conducted an online survey of food attitudes, perceptions, and behaviors in 1000 representative households from Canada – a country with typical food waste habits in the developed world.



The analysis revealed a number of strong predictors of food waste, which fell into three primary clusters:

Low food salience, or difficulty noticing and keeping track of remaining foods

Perceived lack of time, energy, and imagination for figuring out how to use up the food at hand

Sensitivity to suboptimal food, leading people to throw away foods that are blemished or just past their prime

Our survey made it clear that the food waste issue does not primarily lie in surplus purchasing habits. Instead, our intervention efforts should be focused on helping people manage, recover, and find ways to consume the foods they already have. Now – onto some rigorous testing.

A data-driven approach to identifying high-impact behavioral interventions

Based on the results of our preliminary survey, our team collaborated with Hellmann's and Marketing Mums to develop a number of behavioral interventions which fell into three main categories aimed at:

increasing food salience

improving perceptions of suboptimal foods, and

helping people to think flexibly about the food they have, to encourage the act of using up

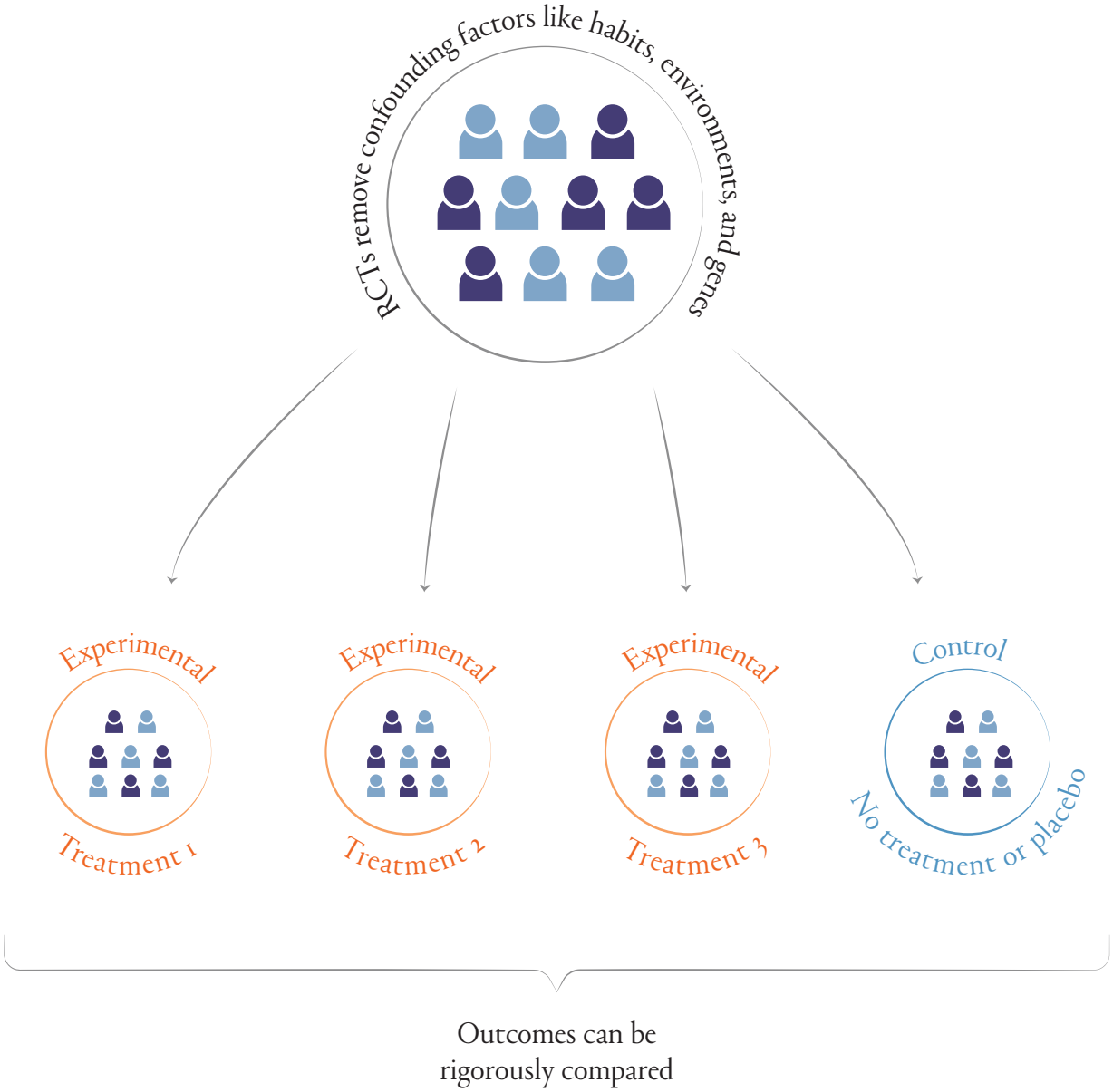
In order to make an evidence-based decision about which tactics can yield maximal benefits in each of the three target behavioral dimensions, one thing is absolutely crucial - data. We thus conducted an online randomized controlled trial comparing over 20 candidate interventions in terms of their ability to impact psychological processes such as individuals' ability to notice foods and generate ideas for creative use of food leftovers. Our trial highlighted a select number of tactics that effectively drew individuals' attention to key food items and boosted their ability to think flexibly about how they might repurpose food they have. This, in turn, allowed us to proceed with fine-tuning those interventions with the greatest likelihood of impacting food waste before the ultimate test of their effectiveness: a large-scale in-field study.

Randomized Controlled Trial Explained

Figuring out whether a particular factor or intervention causes certain outcomes can be a challenge. For instance, when population studies find that people who eat more red meat have worse health outcomes, one possible interpretation is that red meat consumption causes ailments. But what if those who eat more red meat tend to have higher rates of disease simply because they generally eat more burgers and other types of junk food? Or maybe they have a variant of a gene that both makes them love the flavor of red meat and predisposes them to illness? The web of factors at play here can be tough to disentangle.

The randomized controlled trial (RCT) is the experimentalist's response to this dilemma. It is the most rigorous scientific method we have for verifying that a particular factor is truly causative, whether we want to figure out if consuming turmeric really does improve our health or if a behavioral intervention can help adults graduate from community college. In such an experiment, some participants are randomly allocated to receive an 'experimental' treatment (e.g. a certain dose of turmeric, or a weekly 'nudge' message as part of a behavioral intervention). Meanwhile, the remaining portion of participants, known as the 'controls', receive no such treatment while being otherwise no different from the 'experimentals'. This arrangement means that, if we observe a difference in outcomes between these groups, it can be logically attributed to the treatment itself. And voila – now we know with a good degree of certainty whether an intervention really has the impact that we want.

Randomized Controlled Trial



largest
in-field study
of its kind

900+
Canadian
Households

5
Weeks

Behavior change in action: helping people tangibly reduce their food waste

To evaluate the real-life impact of interventions aimed at tackling the determinants of food waste flagged up by our team, BEworks led one of the largest field experiments of its kind to measure their effects in a 5-week-long food waste study. Our study involved over 900 Canadian households with at least one child: one of the most food waste-heavy demographics[3].

In this experiment, we compared the household food waste habits of a control group receiving no intervention with those of 'experimental' households taking part in an integrated behavior change program that our team had collaboratively developed with Hellmann's by combining several of our vetted techniques. Depending on their assigned experimental condition, the food re-discovery component of our program involved providing participants with a different tool to help them track, tag, or collect foods that needed to be eaten over the course of each week.

The food re-purposing component of the program was identical across all experimental conditions. Here, participants were asked to commit one day a week to be their 'Use-Up Day' for making meals out of ingredients they might otherwise throw away. We also asked our participants to use a simple 3+1 rule we developed with our partners to help guide their meal prep and boost their ability to think more flexibly about how they might re-purpose random bits of food. In short, the 3+1 rule encouraged individuals to think about meals as comprising 3 main building blocks - a base (e.g., pasta, potatoes), a protein source (e.g., chicken, tofu), and a dose of vegetables - topped off with 1 'magic touch', which could be mayonnaise, a spicy dressing, or some other flavorful component. Its core message was that food items falling into each of the 3+1 categories are easily interchangeable, and thus able to compose a balanced meal based on what is available.

To make this rule concrete, we provided participants with a set of flexible recipes to serve as examples of the 3+1 rule applied to the act of making something like a frittata, omelette, or a salad.

Reducing food waste is doable. It's also thoroughly enjoyable.

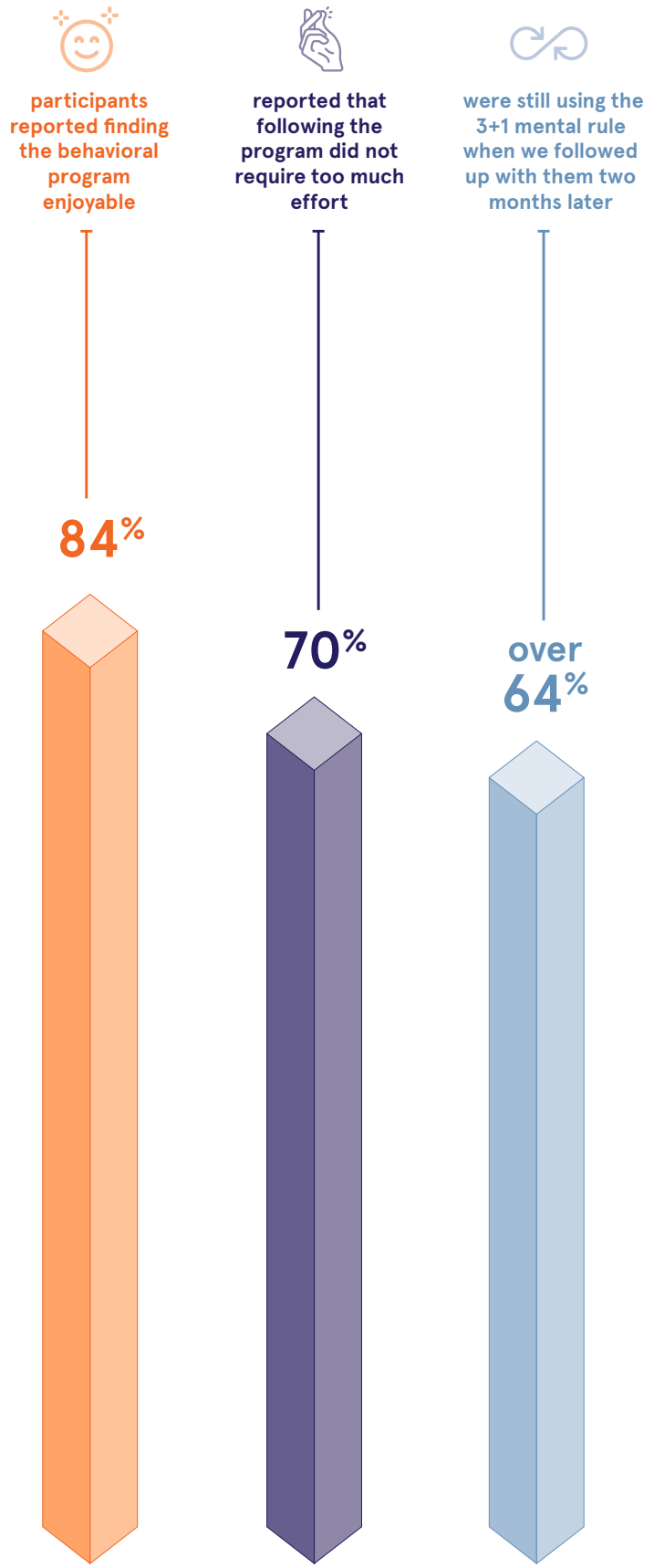
Our in-field study revealed that all four of our behavioral intervention combos significantly reduced food waste compared to the control group, by up to 33%. Here, the tactic aimed at boosting food re-purposing appeared to be the secret sauce, as the condition which exclusively provided participants with the 3+1 mental rule and flexible recipes performed just as well as the conditions that also offered behavioral tools aimed at improving re-discovery.

Importantly, we obtained encouraging signs that our intervention could become a long-term and sustainable component of people's daily lives. 84% of our participants reported finding the behavioral program enjoyable, 70% reported that following the program did not require too much effort, and over 64% were still using the 3+1 mental rule when we followed up with them two months later.

Our results attest to the fact that a simple intervention which encourages individuals to commit to change and offers a simple mental tool to help them do so can have a meaningful impact on behavior. They also showcase the importance of taking a scientific lens to the question of where, in the long chain of behaviors, it is best to intervene to achieve maximal impact. Our intuition may tell us that food waste results from households accruing

an unmanageable food surplus as a result of insufficient planning and excessively large food orders. But it is only by exploring such a question using scientific methods that we can correct our potential misperceptions and identify a direction most likely to deliver results.

BEworks' and Hellman's experimental approach provides proof-of-concept that behaviorally informed strategies have the potential to tangibly impact food waste and present a viable long-term solution to a global dilemma. The evidence is clear. Behavior change is doable. It's also thoroughly enjoyable!



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