

WHAT THE FUTURE: FOOD

Hybrid work will upend our food habits (again) PAGE 5

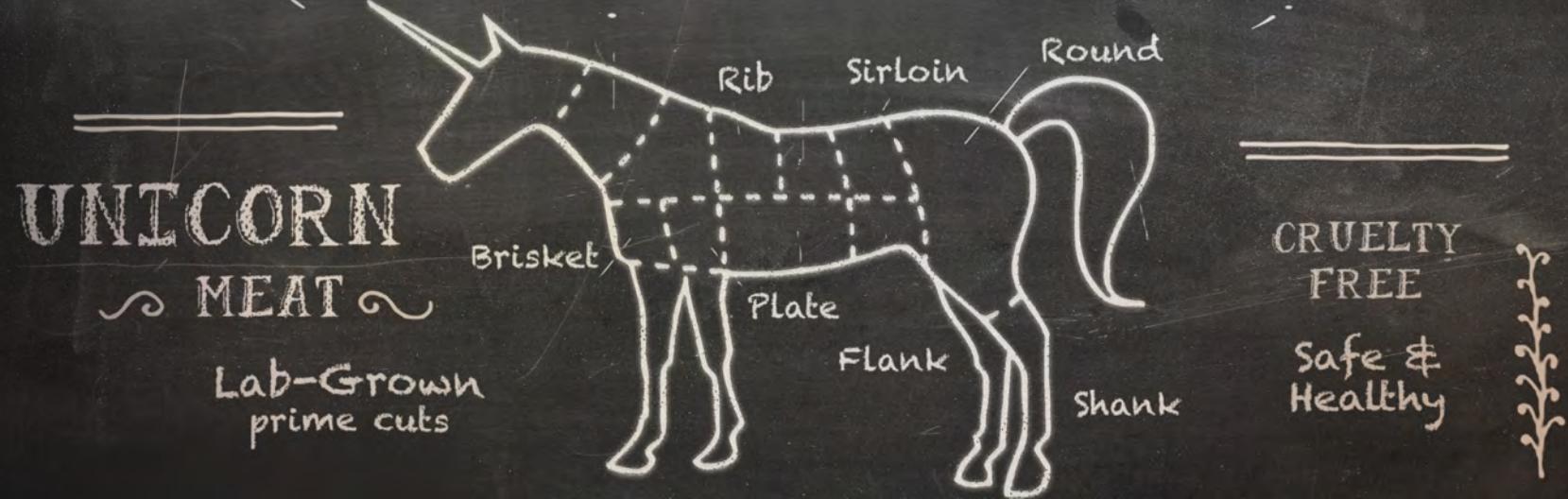
Ways delivering food will get even more convenient PAGE 8

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 Experts from Mars Wrigley, Grubhub, Iron Ox, Update Beverages and Because Animals share the futures they envision for how we grow, buy and eat food

* Note: This is cultured meat, no actual unicorns were harmed in the making of this cover.



GAME CHANGERS



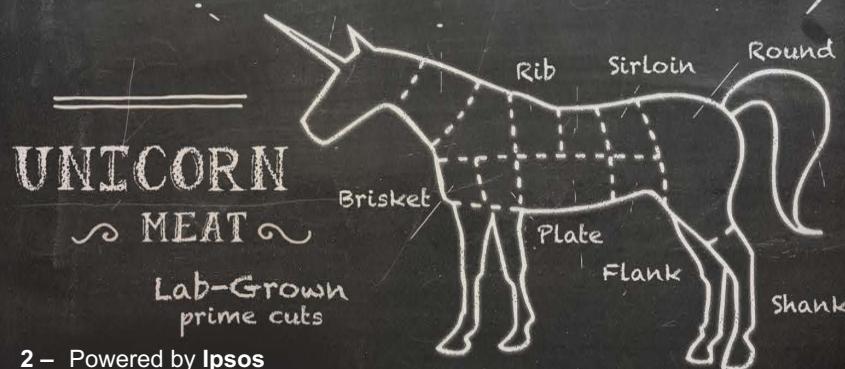
Imagine it's 2032.

Climate change, population shifts and continued inequality are stressing our food systems and our ability to afford the food we need. That is, unless we build for a future that solves for those challenges.

In this bleak version of the future, farmers are forced to choose which, if any, crops they can plant based on the available water in their region that season. Oh. Wait. That's *already happening* in [California](#), which grows one-third of the vegetables and an even larger proportion of fruits and nuts in the U.S.

If you read What the Future's Earth issue, you heard the theme that there is no *one* solution, we need *all the solutions* working together. That's true for our food system as well. Thankfully, solutions exist like producing ingredients synthetically, and utilizing new farming techniques, which we'll talk about in this issue. Those can lead to replacements for existing products as well as opportunities for innovating new foods and beverages.

As climate change and technology shape how we produce our food, so too are we developing new ways to procure and consume it. The pandemic upended many habits. We as diners hope some of those new habits will stick, although maybe we're not all going to keep up with our sourdough starters.

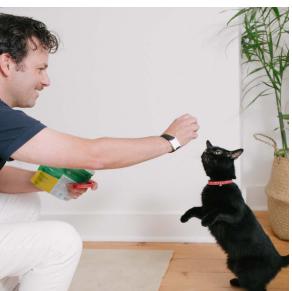


63%

of Americans expect the cost of the food they eat to get worse in the future.

(Source: Ipsos surveys conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Contents



1. Territory map

The future of food will be driven by forces coming from six directions. We map them out.

2. The lay of the land

We talk with experts from Mars Wrigley, Grubhub, Iron Ox, Because Animals and Update Beverages about how the ways we work shape how we consume food, how science and tech are changing how we cultivate and prepare food, and how globalization is diversifying our food culture.

3. Tensions

Will people change their diets to protect the environment? How will people balance the convenience, price and sustainability of the foods they eat? If science can recreate what nature makes, will people trust it? If these opinions shift in the future, how will that affect our food supply?

4. Plausible ports and Waypoints

Based on our data and interviews with experts, we plot out a potential future — a plausible port in our future journey. Then, thinking of our tensions, we consider what happens if one of them shifts. We use that as waypoint to ponder how that might send us to a different scenario, plausible port two.

5. Appendix

Want more? We show our work, including the full text of our expert interviews, our contributors, links to what we're reading today that has us thinking about tomorrow, and some bonus data. Finally, we include another installment of our Future Jobs to Be Done feature, giving you a new way to think about the future.

Territory: What will drive the future of food?

The factors that will shape food in the future range from primal to scientific and from universal to intensely personal. We map out six macro forces and talk through how we grow, buy and consume food and what it means in our identities and culture and as nourishment and entertainment.



Hybrid work will upend our food habits (again)



Joanna Lepore

Global foresight associate director, Mars Wrigley

Food itself serves physical as well as emotional needs for humans. Our food purchases do too, as we try to balance a desire for sustainability with the reality of how most foods are produced. A futurist for Mars Wrigley, and host of a pair of podcasts including "Looking Outside," Joanna Lepore studies the contradictions we face as people, consumers and foodies.

39%

of adults ages 18-34 would prefer to work mostly or all from home after pandemic restrictions are lifted.

(Source: Ipsos Coronavirus Consumer Tracker conducted Mar. 15-16, 2022, among 1,154 U.S. adults.)



Our changing definitions of convenience come into play as well. Lepore suggests it's about our need to be pragmatic so we can spend time on things that really matter to us. As hybrid working situations become more common, they impact how we get our food, and when and how we snack, she says.

"Your core value system around buying more planet-friendly, eating less meat or dairy or trying to reduce your sugar intake can coexist with the fact that you need emotional rewards."

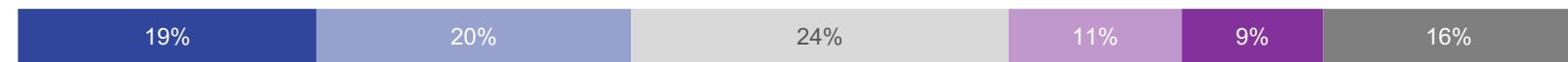
The pandemic accelerations of trends mean we could continue developing new habits, but she sees contradictions with one other key thing about food in our lives: the role food plays in our traditions, heritage and culture.

[Read the full Q&A on page 27.](#)

If younger workers get their way, work and home will be hybrid

Q. In your opinion, what is closest to the right mix of working from home versus working in an office for after pandemic restrictions are lifted? (% Total)

Ages 18-34



Ages 35-54



Ages 55+



■ All at home ■ Mostly at home ■ Evenly split at home and at the office ■ Mostly at the office ■ All at the office ■ Don't know/Not applicable

(Source: Ipsos Coronavirus Consumer Tracker conducted Mar. 15-16, 2022, among 1,154 U.S. adults.)

Hybrid work means hybrid food shopping

One in three now says they have multiple sources of income, and one in four is working from home at least some of the time. Hybridization of our work lives means that how we procure our food is up for grabs. But as we snack differently, increase our usage of delivery, slot grocery trips into our days and weeks differently, one thing is clear: We want it to be convenient. That increasingly means having a seamless experience between stores and apps, says Sarah Lehman, a vice president with Ipsos' Channel Performance practice.

“Knowing which technological enhancements to pursue and which to ignore can be challenging.”

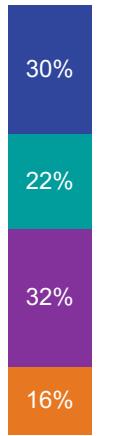
She says that the difficult part is balancing between being too tech-forward, whereby you could lose your base customer, or adopting too little or no technology at all, which could leave you vulnerable to dissatisfaction and increasing competition.

We don't just want convenience in our lives because it's easy. We need it because our lives are complicated as we balance work in a hybrid world, which may or may not have built-in rhythms and routines. For many of us, we're also balancing a patchwork of gigs to make ends meet or give us the flexibility we're looking for.

Brands that can help people find the balance, make the experience simple, and make meal planning as straightforward as possible will find themselves rewarded by grateful customers.

Multiple incomes could make meal planning more complex

Q. Do you have a single source of income, or do you earn income in a few different ways or through different jobs?



- Single source of income – salaried
- Single source of income – not salaried
- Multiple sources
- I don't have an income/Don't know

(Source: Ipsos Coronavirus Consumer Tracker conducted Aug. 31-Sep. 1, 2021, among 1,166 U.S. adults.)

Ways delivering food will get even more convenient



Kyle Goings

Director of merchant growth and new verticals, Grubhub

Convenient no longer means what it used to. Today most people can get most anything from pizza to liquor to toothpaste delivered anytime, anywhere. In the future, that value is unlikely to shift. That's especially true for food, as ghost kitchens and indoor agriculture bring food creation closer to our doorstep than ever. Kyle Goings wants Grubhub to be the brand to bring it to you, whether that's a fully cooked meal or a missing ingredient in the recipe you're cooking yourself.

69%

of Americans are willing to order from a virtual restaurant if they are already familiar with the brand; 56% would be willing if the brand hadn't had a physical location before.

(Source: Ipsos survey conducted Oct. 22-25, 2021, among 1,171 U.S. adults.)

A recent Grubhub partnership with 7-Eleven and other moves in this space show how the importance of delivered “convenience” is spilling into virtually every category within food and beyond. The services that can deliver more than one kind of thing fill that need best, Goings says.

“We’re finding that one of the biggest drivers for restaurant or just platform loyalty is serving multiple needs or businesses or use cases rather than just one.”

What does that look like going forward? Goings sees a continued confluence of on-demand food culture where those who get used to ordering delivery from restaurants then order more from convenience stores and vice versa.

[Read the full Q&A on page 29.](#)

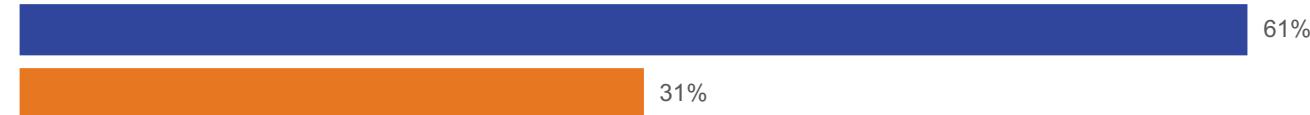
Americans are open to buying food from virtual restaurants, but less so from convenience stores

Q. Think about if a company started a virtual restaurant. This restaurant has no retail locations (there is no seating and no drive-thru). The restaurant will deliver hot and cold food to you that you order from a website or app. (% Total)

I would be willing to order from a restaurant like this if I were already familiar with the brand (like a McDonald's or Olive Garden)



I would be willing to order from a grocery store like this



I would be willing to order from a restaurant like this if it was a brand that hasn't had a physical location before



I would be willing to order from a convenience store like this



■ Agree ■ Disagree

(Source: Ipsos survey conducted Oct. 22-25, 2021, among 1,171 U.S. adults.)

Waste not: want!

The on-demand food culture presents certain sustainability challenges, at least as long as that food is delivered by gas-powered vehicles and in single-use plastic or Styrofoam. But it has the potential to cut down on one problematic area — food waste. If we're ordering more food when we need it, we're less likely to have food going to waste in our fridges, says Britt Calvert, a vice president in Ipsos' Innovation practice.

"The next step, of course, is creating more food directly at home, either by growing it or eventually 3D printing it."

Brands can help diners with that tension. The less waste we create, the less guilt we feel. Brands that free customers from that guilt while enabling their convenience will come out ahead.



People feel worst about wasting fresh foods

Q. Please describe how you feel in the following situations (% Guilty)

When I throw out fruits or vegetables that I purchased but didn't prepare or eat



When I throw out meat that I purchased but didn't prepare or eat



When I throw away food that I put on my plate but didn't eat



When I throw out milk that I purchased but didn't prepare or eat



When I throw out an entire food package that I tried but didn't like



When I use disposable cups, plates, or utensils to avoid having to wash dishes



When I order too much food at a restaurant that I cannot finish



(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)



Consumers need brands to help them buy more and waste less

Consumers get that they have a role to play in creating a sustainable food economy. But they also know they can't do it alone. Reducing food waste is something both consumers and brands can play a part in, but customers often don't get to choose their food packaging.

Consumers often look at packaging as waste, not understanding the role it plays in getting food to them, fresh and undamaged. During the pandemic, restaurants often used whatever options were available for delivery, leading people to feel guilty instead of safe. Ipsos data shows that people want to see more recycled and recyclable materials in their food packaging, says Maureen Evans, a senior vice president in Ipsos' Innovation practice.

“For a sustainable future, people are looking to brands to continue their efforts toward more sustainable packing options to help diners meet their own sustainability goals and feel less guilt.”

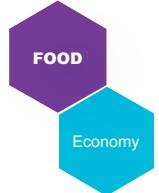
That could reduce this tension between desires for sustainability and convenience.

People want better recycling options

Q. Please indicate how much you agree or disagree with each of the following statements. (% Agree)



(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)





Climate change and the ‘glocalization’ of the global cuisine

Most people like to try foods from other cultures and parts of the world. What does that look like in a changed climate where the supply chains are already stretched thin?

Experiencing other cuisines can broaden our understanding of places and people. But flying ingredients globally is increasingly challenging and less than environmentally friendly.

Meanwhile, climate change impacts our ability to grow crops where they have historically been farmed. Wars, the pandemic and labor issues disrupt the supply chain. Inequality impacts who can afford to eat what.

“Advances in agrotech must increasingly factor in as a solution,” says Karthik Ramamurthy, head for the MENA region at Ipsos Strategy3.

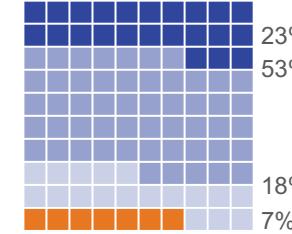
“Being able to grow foods anywhere, in any climate, can contribute to solutions for all these issues, but the key is using sustainable sources of energy and water for deploying these technologies.”



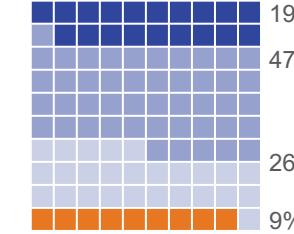
Americans say they try different foods

Q. How often, if at all, do you do the following? (% Total)

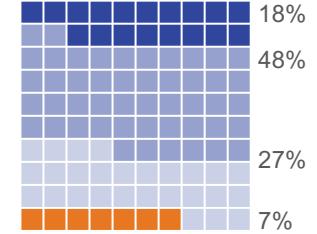
Try foods from cultures other than your own when you go out to eat



Use ingredients from cultures other than your own when cooking at home



Try foods from cultures other than your own when cooking at home



■ Often ■ Sometimes ■ Rarely ■ Never

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

How indoor farms make food more accessible



Sarah Osentoski

Senior vice president-engineering, Iron Ox

Iron Ox is an indoor farm. But don't call it a vertical farm. It's an automated greenhouse where robots do much of the cultivation. That allows the company to control its food-growing environment while helping the broader environment by using less energy, water and land. Sarah Osentoski uses her background in robotics and machine learning to help make that happen as efficiently as possible.

47%

of Americans overall are familiar with vertical farms for produce, and 60% of Millennials are.

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Iron Ox and similar ventures aim to solve two problems at once. First, to make farming itself more sustainable. But just as important is creating more efficient growing techniques to maximize how much quality food can be produced. That's especially important as the growing climate becomes less hospitable in many regions, says Osentoski.

"We can both be gentler to Earth as we grow, as well as be better for the planet, in that we can grow more food to help sustain the growing population."

Iron Ox's farms employ a wide range of skills ensuring that technology can help prepare us for our future by evolving the techniques from the past.

[Read the full Q&A on page 31.](#)

In-store vertical farms are most appealing to shoppers compared to other innovations

Q. How interested, if at all, would you be in purchasing the following items if they were available at your grocery store? (% Interested)



69%

Produce from an in-store vertical farm, like lettuce, herbs, berries, tomatoes, etc.



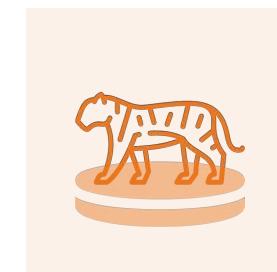
41%

Food or ingredients synthesized in a lab that can replace ingredients that are difficult or costly to grow sustainably in nature



33%

Foods that I order in the metaverse, but get delivered to me in person



22%

Lab-grown meats from wild animals such as tigers, giraffes, lizards, etc.



21%

Lab-grown fantasy foods that don't currently exist, like unicorn meat, dragon meat, etc.

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults, including 775 U.S. adults familiar with vertical farms.)

How brands can synthesize a business from a desired ingredient



Daniel Solomons

CEO, Update Beverages

The ability to synthesize ingredients is already reshaping foods and beverages. That can help solve food supply problems but also lead to new innovations. Daniel Solomons, CEO of Update Beverages, is creating a new caffeine-free energy drink around a synthesized component of caffeine called paraxanthine, to provide all the energy without the jitters or crash. It's one example of how new technologies can fuel new foods and beverages that can, well, fuel us.

21 %

of Americans say they would be interested in fantasy foods that don't currently exist, like unicorn or dragon meat.

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Paraxanthine is only now becoming feasible to produce at scale and a plausible price point. Just as this is a new product with a new central component, it's being targeted to a new audience: the crypto, NFT and blockchain-based Web3 builders. Solomons says that this community is spending most of its day in front of screens and needs energy to keep at it. Part of the plan involves a crypto-based loyalty component, like a new generation of your coffee punch card or app.

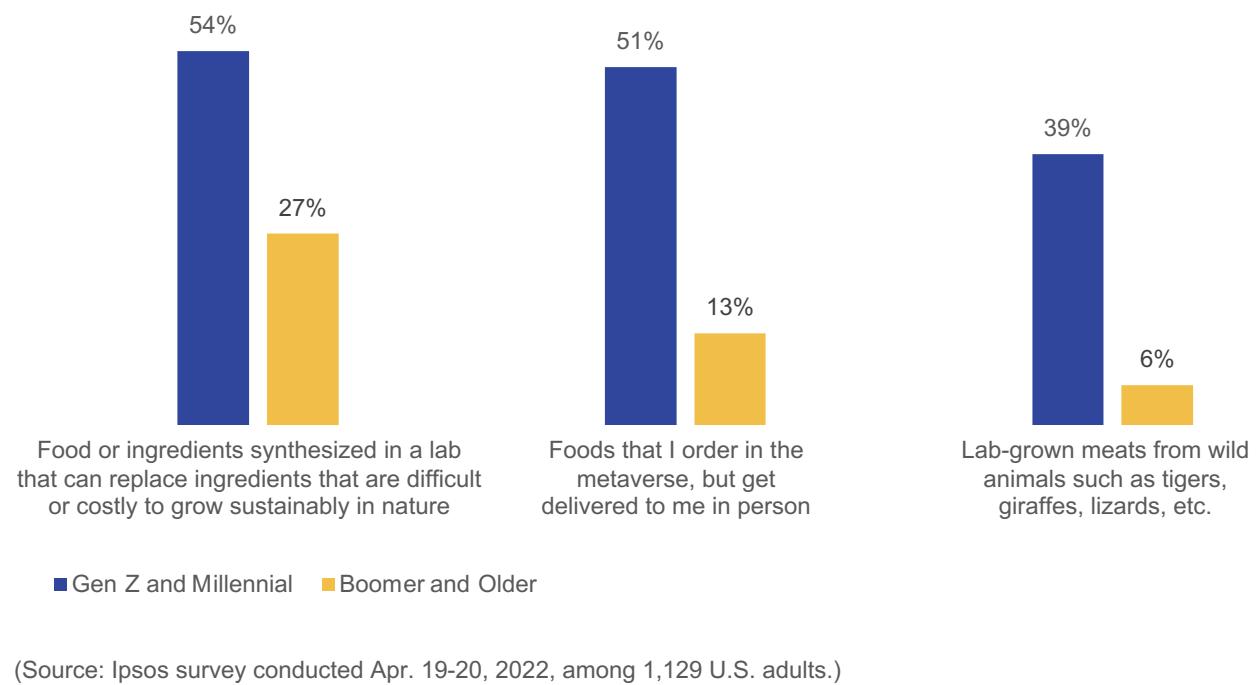
“The membership badge will be an NFT and can live in your OpenSea account. Within it, there will be different achievements represented through NFTs, too.”

He says that will allow for new kinds of brand interaction for customers. Update Beverages is even planning to build out its own metaverse. So as our lives become increasing virtual, our foods will play in that space, as well.

[Read the full Q&A on page 33.](#)

Younger consumers are twice as interested as older peers in synthetic foods and virtual foods they find in the metaverse

Q. How interested, if at all, would you be in purchasing the following items if they were available at your grocery store? (% Interested)



Why paleo for pets is the new sustainability



Shannon Falconer, Ph.D

CEO and co-founder, Because Animals

An oft-cited study from UCLA estimated that the impact on the environment from raising meat for pet food is substantial. Yet pets often eat meat byproducts that humans don't want, making pet food part of the argument for sustainable consumption by humans. But that can't be the only sustainability solution. Nor can we ask our carnivorous cats to go vegan. Shannon Falconer CEO and co-founder of pet food maker Because Animals, has an additional solution: cultured meats. First up, mouse treats for cats. It's like paleo for pets.

47%

of Americans have one or more dogs while 32% have one or more cats.

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Dogs and cats are historically carnivorous, but they don't typically eat cows and chickens in the wild. Cultured meat, which is grown in a lab, allows Because Animals to create more appropriate products, like mouse for cats and rabbit for dogs. Falconer headed off any questions about the genuineness of the products. "Cultured meat is meat," she says. More importantly, because it is not a by-product, cultured meat can leverage other forms of meat that aren't necessarily allergens, like chicken and seafood can be for dogs and cats.

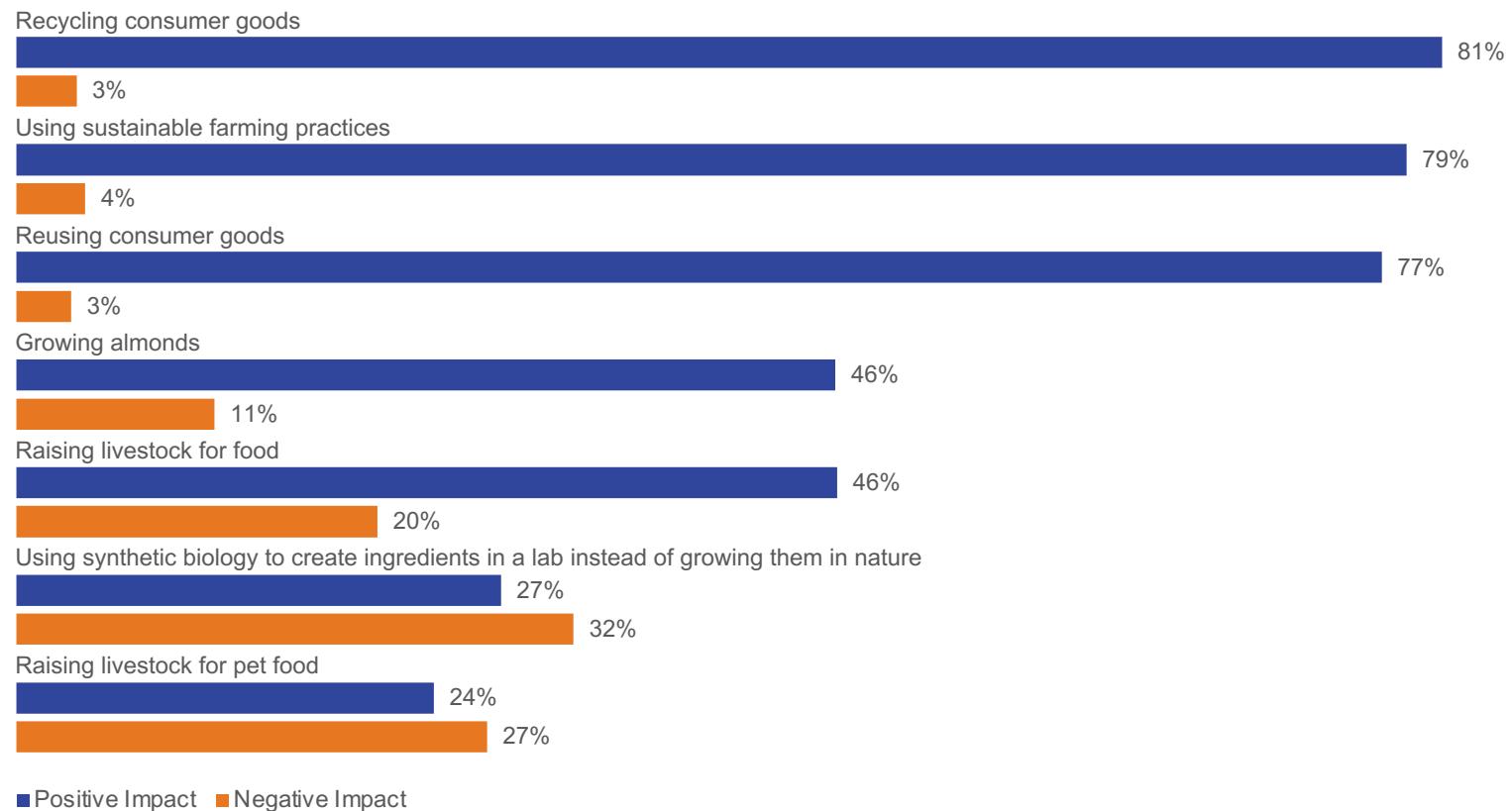
"We saw this as an opportunity to grow the protein source that's most evolutionarily appropriate for our pets."

It's a potential win for both pets and the environment and portends the kind of solutions needed to help keep the food industry on a sustainable course for pets and humans alike.

[Read the full Q&A on page 35.](#)

Americans see more environmental negatives to growing food in a lab, but almost as many see negatives in raising livestock for food

Q. How much of a positive or negative impact do the following have on the environment? (% Total)



(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Four tensions that will drive change:

1. Environment or favorite foods?

The environmental impact of food is unarguable. But, well, we'd rather not think about it. We'd rather eat our beef and eat our almonds and not worry. Mother Nature, however, might have other ideas. We might not be able to choose which side we fall on this tension much longer. Many solutions exist, but many still need time, both in terms of development as well as acceptance and adoption. Mars Wrigley's Joanna Lepore understands these consumer contradictions. "They want to have the comforts of the food that they've always had but be able to choose the more sustainable option, and it's not always available," she says. "We need to be a little bit patient as well when it comes to some of this transformative change."

Most people want to eat what they want despite the environment

I want to enjoy eating the foods I like, such as meat, without worrying about the environmental impact

68%

32%

I consider the environmental impact of the foods I eat, and try to limit items, like meat, that have a negative impact

Q. For each of the pairs of statements, please select the statement that comes closest to your view, even if neither is exactly right. (% Total)

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Four tensions that will drive change:

2. Health or price?

Often, this is a tension that plays out in our homes and families each time we go to the grocery store. Depending on the economy, it gets better or worse. But when your choices are a matter of what food stamps will cover, or whether you buy the healthier foods or pay your electric bill ... well ... you do what you have to do. There's a plausible future where either through progress or policy we won't have to make this choice. Where healthy foods will be affordable for all. Until then, price and convenience are often the dominant factors in whatever we buy. "People just want a one-stop shop," say Grubhub's Kyle Goings. "They want to be able to come to a platform like Grubhub that guarantees the most competitive price, and they can get whatever they want."

Price outweighs health for most food shoppers

I buy the most affordable foods I can

54%

46%

I try to buy the healthiest foods I can, regardless of cost

Q. For each of the pairs of statements, please select the statement that comes closest to your view, even if neither is exactly right. (% Total)

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Four tensions that will drive change:

3. Local foods or variety?

Ipsos data shows that people like to eat food from other cultures (see page 12), but they also prefer to eat food grown locally. Today, this is a tension that gets at the sustainability of the supply chain, as it's not really all that great for the environment to be air shipping fresh-caught Chilean sea bass to your local fishmonger. But that could change if we can culture more foods and grow more kinds of foods in controlled environments, maybe at the grocer or a local indoor farm. "Each step where someone has to handle the product provides a risk for a stoppage," says Iron Ox's Sarah Osentoski. "In our case, that distributed nature will also have more food being grown closer to local communities."

More people want foods grown locally but that can be limiting

I prefer to eat foods grown locally

57%

I prefer to eat foods with more variety

Q. For each of the pairs of statements, please select the statement that comes closest to your view, even if neither is exactly right. (% Total)

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Four tensions that will drive change:

4. Foods from science or nature?

When you say “science” in the context of food, it can spur a negative reaction, as we see in the data below. “Natural” on the other hand always seems like the better idea. But often, it’s the same thing and once consumers truly understand that, it could lead to real progress, says Shannon Falconer CEO and co-founder of pet food maker Because Animals. Brewing cultured meat and brewing beer are basically the same process. “We’re trying to demystify it and be as transparent as possible because it does stand to be an incredibly safe and nutritious ingredient, far more than what is currently on offer. Once people begin to understand what it is, a lot of that anxiety will go away.”

Lab-grown foods will be challenged to win over shoppers

I only trust foods that are naturally occurring

77%

23%

I trust foods that are developed or created through science

Q. For each of the pairs of statements, please select the statement that comes closest to your view, even if neither is exactly right. (% Total)

(Source: Ipsos survey conducted Apr. 19-20, 2022, among 1,129 U.S. adults.)

Plausible port one:



Food gets harder and more expensive to grow the old way

Imagine it's 2029. You are trying to get a burger delivered. Simple, right? Except that meat is costly. Climate change led to new tariffs and taxes placed on beef to reduce demand. Droughts have reduced the land for ranching and caused the cost for livestock feed to soar. Supply chain issues impact the seeds for buns and mustard, too. And let's not even get started on what it takes to grow a tomato these days.

In our current world, almost three in four people say they do not trust food created by science. So, solutions that could help all these problems languish from a lack of widespread adoption. Brands make every effort to convince consumers of the efficacy and flat-out need for solutions but fail to overcome the sociopolitical arguments and polarization of the American mindset.

People fail to take threats to food security seriously, and efforts to tie the urgency of the food situation to the climate crisis backfire, causing efforts to address both issues to stagnate.

In short, even if you have the means and opportunity, feeding yourself is going to be increasingly challenging, although less challenging than if you don't have those resources. This exacerbates growing inequality in our access to healthy foods and related health outcomes.

Waypoints

But what if we start to have greater trust in the science?

This is really a marketing challenge as much as anything. As with many new technologies, the obstacles are both a brand marketing issue and a product marketing issue. In this case, the product is the technology itself, whether it's the process of synthesizing an ingredient or culturing a meat or modifying a crop to make it more resistant to drought. In 2022, Ipsos data shows that 77% of people say they "only trust foods that are naturally occurring." Do people understand that the synthetic ingredients are genetically the same as the "natural" ones? Not necessarily. But say a combination of better consumer understanding, policy shifts and a frankly unarguable need for new solutions shifts that tension toward greater acceptance. What does that future look like?



Plausible port two:



People embrace new ways to farm

In a world where we accept more solutions, we solve more problems. In this plausible port, our shifting waypoint shows that we are open to more possible solutions to food insecurity and its cousin problem, climate change.

We accept that food can be grown indoors, which means that a greater array of crops can be grown locally and delivered conveniently. We accept that beef doesn't have to come from a cow, which means that we can lower the environmental impact of our meat consumption. Adding cultured meat to the mix for pets helps, too. Scientific advancement, coupled with a desire by many to decrease their meat consumption overall, makes a serious dent in climate efforts and makes these solutions more scalable, and therefore, more affordable.

People can synthesize foods at home, or partner with delivery companies to create foods that complement their virtual metaverse travel experiences, whether they are visiting digital twins of real places or entirely fanciful worlds. In this future, a new profession develops, creating "recipes" for foods from fictional or virtual animals and plants.

Existing and upstart food brands flourish as new spaces are carved out in the marketplace, but in a sustainable way that aligns with consumer values.

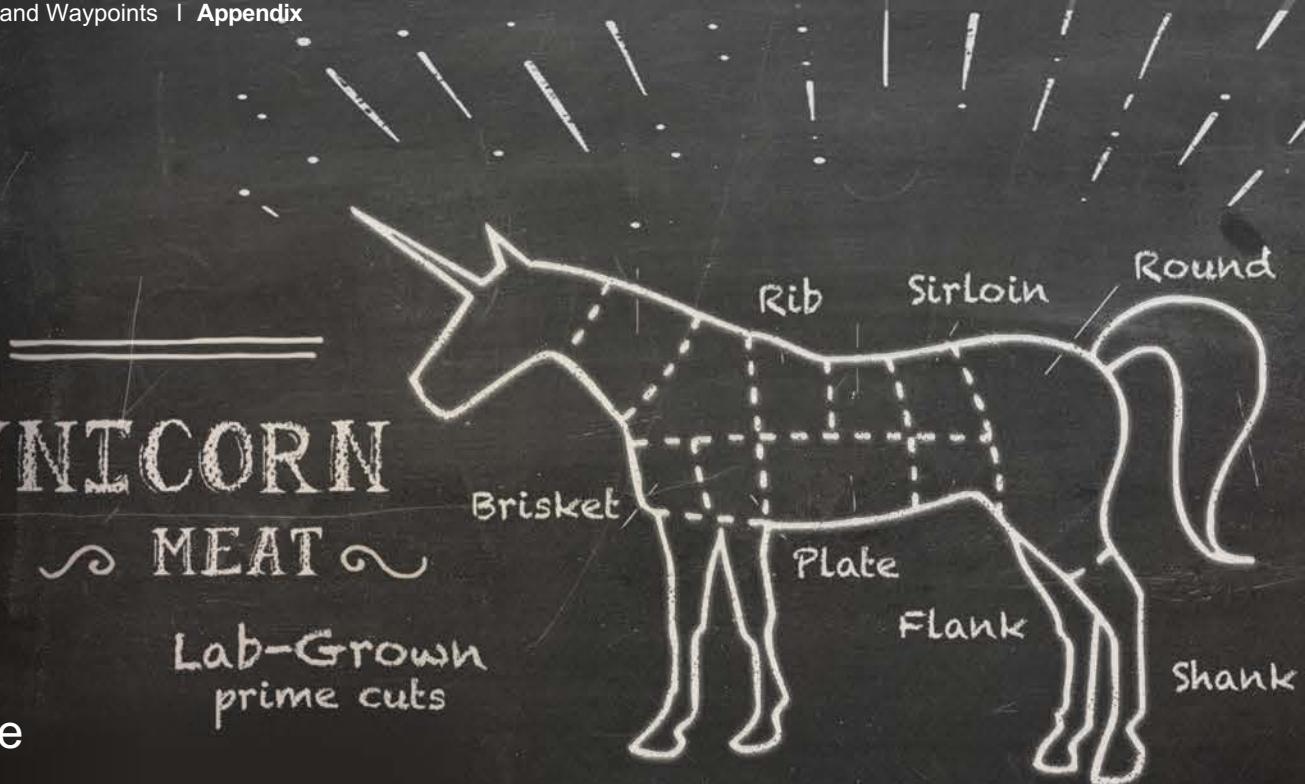
Appendix

In this section,
we show our work
and our workers

1. Full Q&As
2. Signals
3. Contributors
4. Future Jobs to Be Done

UNICORN
MEAT

Lab-Grown
prime cuts



Hybrid work will upend our food habits (again)



Joanna Lepore

Global foresight associate director, Mars Wrigley

Food itself serves physical as well as emotional needs for humans. Our food purchases do too, as we try to balance a desire for sustainability with the reality of how most foods are produced. A futurist for Mars Wrigley, and host of a pair of podcasts including “The Future Imagined,” Joanna Lepore studies the contradictions we face as people, consumers and foodies.



Matt Carmichael: What changes have you seen in terms of our work life balance and what that means for when and how we eat?

Joanna Lepore: We've been talking about the "blurring of occasion" for five or 10 years. Like everything else in the pandemic, that accelerated. A lot of people created new habits of working from home or having childcare from home or studying from home, and their snacking and eating occasions started to become more blurred and less structured.

Carmichael: People are thinking more about how food makes them feel, too, right?

Lepore: Yes. We're thinking about whether food fulfills a role that allows you to have more energy or more sustenance emotionally to get through what you're getting through, and then really rethinking the moments of rewards. We saw a big shift toward how dessert, after a very long working day, plays a critical role to close off the hours of blending your job inside of your life.

Carmichael: How does food help with that?

Lepore: Foods now can contain mood modulation ingredients that help calm you, or ingredients that help boost performance cognitively, like nootropics, or ingredients that are a little bit more experimental. There is a greater openness for the food industry to think differently about how food is composed so it can deliver on those same needs that consumers have, but in a slightly different way. That goes for not only what we're adding into the food, but also what we're taking out.

Carmichael: Will these changing attitudes stick?

Lepore: I think the thing that will likely stick is the ability to reset between the different parts of my life and the roles that I play within them. There's a lot of opportunity with food that allows you to reset.

Carmichael: The shift from in-store shopping to online and delivery must be especially important for a snack-food brand to think about.

Lepore: We will see more startups where you can buy directly from the seller online or even from the producer. What comes with that is choice paralysis. So how do we help them to navigate toward products that are more personally beneficial or meaningful to them?

Carmichael: We've talked a bit about work from home, but food can also play a role in getting us back to the office.

Lepore: Yeah. One of the biggest things that brings people back into the office is free donuts. Food is a great motivator, and it's a great enabler for people to connect.

Carmichael: Hybrid work feels like one of those human contradictions, similar to the tensions we talk about in this issue. We want flexibility, but we also want connection.

Lepore: There are a lot of contradictions inside of human behavior that are quite natural and quite constant. Like your core value system around buying more planet-friendly, eating less meat or eating less dairy, or trying to reduce your

sugar intake can coexist with the fact that you need emotional rewards. You need that piece of chocolate that will get you through at the end of the day. That's OK. I think that the recognition that consumers have dual and sometimes contradictory needs is even more present now.

Carmichael: What's another example?

Lepore: Synthetic biology and fermentation links back to our core human need to progress and leverage the latest technology to make ourselves better. But that's contradictory to that the values around retaining our heritage and retaining our culture and the way that things have always been.

But those things can coexist. Or people want to have the comfort food that they've always had, but also want a more sustainable option that's not always available. So how do we think about designing product solutions and commitments around making it easier for [people] to shift their behavior? How can we create simpler solutions that enable people to be empowered to change the rituals in their lives to help with this big, overwhelmingly complex topic?

Matt Carmichael is editor of What the Future and head of the Ipsos Trends and Foresight Lab.

“I think that the recognition that consumers have dual and sometimes contradictory needs is even more present now.”

Ways delivering food will get even more convenient

**Kyle Goings**

Director of merchant growth and new verticals, Grubhub

Convenient no longer means what it used to. Today, most people can get most anything from pizza to liquor to toothpaste delivered anytime, anywhere. In the future, that value is unlikely to shift. That's especially true for food as ghost kitchens and indoor agriculture bring food creation closer to our doorstep than ever. Kyle Goings wants Grubhub to be the brand to bring it to you, whether that's a fully cooked meal or a missing ingredient in the recipe you're cooking yourself.

Kate MacArthur: How does this hybrid shift in our work style — and society at large — change how people define convenience?

Kyle Goings: Something that is and has been and will always be true is that convenience means different things to different people. Think of a brand partnership like 7-Eleven. We've recently deepened our partnership with them with our Grubhub Goods brand that we launched with them. It's those kinds of items that we find are most relevant to our customers; the snacks, drinks, toothpaste, milk, basically the consumer-packaged items.

MacArthur: How does that shift the tradeoffs that people are willing to make in things like speed or price?

Goings: They want both, and we don't want them to have to pick one over the other. We offer things like a Grubhub Guarantee, which is like retail price matching. We're so confident that we have the best price versus



competitors that we'll give diners the difference and plus \$5 off their next order if we don't.

MacArthur: How do you see consumers making those decisions?

Goings: There are different use cases. We're seeing it's mostly coming in different times of day, as opposed to the planning ahead versus the "I need it right now [occasions]." So, it's just a difference in non-dinner-, non-lunch-ordering behaviors.

MacArthur: Do you expect this to stick?

Goings: When people order from a convenience or grocery store, or alcohol or something like a new vertical or non-restaurant vertical, we see that they end up ordering more restaurant food because it makes the platform stickier. Will we get every single person to try it and order it forever? No, but there is a big chunk of people on our platform that have ordered it and continue to order it.

MacArthur: How does the addition of convenience and other channels shift how you plan the customer experience?

Goings: If you're cooking, and you forgot tomatoes for the tomato sauce that you're making, you're going to probably be more willing to pay a little bit more if that means that you could potentially get it quicker than if you're ordering your weekly groceries, and you don't need them right now.

You can potentially make less of a tradeoff there if there was one to be made. We can infer a lot of things from our data, based on what is the likelihood or conversion rate of someone that's ordering for a small order.

MacArthur: How much is loyalty brand-specific versus category-specific?

Goings: People just want a one-stop shop. They want to be able to come to a platform like Grubhub that guarantees the most competitive price, and they can get whatever they want.

MacArthur: How soon could we see delivery bots?

Goings: It's tough to predict. We started offering this type of delivery on college campuses last year and it makes sense

for that type of environment given that they are notoriously difficult for cars to navigate. Robot delivery solves for that and then some, which makes it a great environment to provide this delivery.

MacArthur: What else is on the horizon?

Goings: We're also doing some things with stadiums where you can pre-order so you can skip the line if you don't want to miss 10 plays of the game. Or you can pre-order just like you can on our actual Grubhub marketplace for your local restaurant, but it's for the concession-stand lines.

MacArthur: How do alcoholic beverage sales change the business for delivery and convenience?

Goings: When an order contains alcohol, the ticket size is, on average, about 50% higher — resulting in higher sales, and profit for the restaurant. Being able to offer alcohol on their menus during the pandemic has served as a lifeline, and we're seeing many add it to their menus in cities and states where it's newly permitted.

Kate MacArthur is deputy editor of What the Future.

“People just want a one-stop shop. They want to be able to come to a platform like Grubhub that guarantees the most competitive price, and they can get whatever they want.”

How indoor farms make food more accessible



Sarah Osentoski

Senior vice president-engineering, Iron Ox

Iron Ox is an indoor farm. But don't call it a vertical farm. It's an automated greenhouse where robots do much of the cultivation. That allows the company to control its food-growing environment while helping the broader environment by using less energy, water and land. Sarah Osentoski uses her background in robotics and machine learning to make that happen as efficiently as possible.

Kate MacArthur: What exactly is Iron Ox?

Sarah Osentoski: We sell food for people to eat, but we're also a technology developer, and we build vertically integrated greenhouses to grow food precisely, efficiently, modularly and flexibly. So, we're focused on redesigning the farm from seed to harvest, to achieve particular goals with respect to efficiencies. We use sunlight to grow, so we're using greenhouse technology. That allows us to be 75% more energy efficient since we don't need to supplement or use artificial lighting for every part of the plant development cycle.

MacArthur: How big is a typical farm?

Osentoski: We're in the process of bringing up our largest facility in Lockhart, Texas, and that facility has currently about 400 modules in it. But by the time it's finished, we'll have about 5,400 modules. Each of those modules is a 6-foot by 6-foot tub of water. In that tub of water, a bunch of plants are sitting in pots in rafts, and

they float there. For each phase of the farm, we focus on making the plants as close together as they can be. Then we use technology, automation and robotics to transition the plants to the next phase of this farm. We can cycle crops through, like basil or lettuce, rather regularly. We'll spend two to three weeks in this portion of the farm, and then we have a new crop go in. We flip this farm over multiple times.

MacArthur: Is that happening in the background with algorithms?

Osentoski: The farm is also kind of a data farm. The greenhouse is collecting all this data. Then in the background, we have algorithms, machine learning and plant scientists looking at all of this data and doing detections and optimizations to the greenhouse. The other nice thing about the robotics is that those optimizations can start to be programmed in. The robot can make changes to the growing cycle without any intervention.

MacArthur: Tell me about the robots.

Osentoski: We have Grover, our mobile robot, who moves these modules around so that people don't have to walk this entire farm all day. The module goes to different work cells. In those work cells, data might be taken, new plants might be put in, plants will be harvested. We might sample the water, put new nutrients and water in. Phil is our robot that fills, and he puts new water into modules while Grover brings them over. They collaborate together and with people to make these decisions that make the farm work.

MacArthur: What are they capable of?

Osentoski: Robots are capable of sensing data at scale without bias. People always have biases.

MacArthur: How many people operate this farm compared to a traditional farm?

Osentoski: We have engineers, people who work in operations, technicians and plant scientists all working together. It's very cross-functional. There are also jobs here for people who are doing things like picking and doing manual tasks that robots aren't ready for right now. And we also have people working with the robots and doing repairs.

MacArthur: People want to protect the climate, but they want leafy greens year-round. How does this model make those kinds of demands consistent and affordable?

Osentoski: By working to automatically control your input. Our approach is getting this initial system in place, and then once we have it, we can drive those inputs down. That also helps consumers because we can start to work on achieving a good price for them as well.

MacArthur: How did the pandemic affect your ability to get product out, and what does that tell us about the future of the supply chain?

Osentoski: We remained open through the entirety of the pandemic, and we were able to provide food to our customers. Each step where someone has to handle the product provides a risk for a stoppage. In our case, that distributed nature will also have more food being grown closer to local communities.

MacArthur: How might this fit into the future of the broader agriculture industry?

Osentoski: We can both be gentler to Earth as we grow, as well as be better for the planet in that we can grow more food to help sustain this growing population.

“Robots are capable of sensing data at scale without bias. People always have biases.”

Kate MacArthur is deputy editor of What the Future.

How brands can create a business from an ingredient need



Daniel Solomons

CEO, Update Beverages

The ability to synthesize ingredients is already reshaping foods and beverages. That can help solve food supply problems but also lead to new innovations. Daniel Solomons, CEO of Update Beverages, is creating [a new caffeine-free energy drink](#) around a synthesized component of caffeine, called paraxanthine, to provide all the energy without the jitters or crash. It's one example of how new technologies can fuel new foods and beverages that can, well, fuel us.



Matt Carmichael: How do you plan to bring the energy drink category into the future?

Daniel Solomons: The market is massive, but there's been very little innovation to the actual formula of an energy drink since Day One. It's caffeine plus sugar. This future that we're imagining, it's very strange to think people will still be walking around holding today's energy drinks. Caffeine is part of the problem; it's just riddled with side effects. It makes you "crash," you get the jitters, it makes people anxious, it elevates your heart rate and makes you run to the bathroom.

Carmichael: But people love caffeine and coffee.

Solomons: People are moving away from traditional coffee products to alternatives: yerba mate, matcha, green tea, etcetera. But at the end of the day, you're still consuming caffeine.

Carmichael: The ingredient you're working with is paraxanthine. Could you tell us more about that?

Solomons: Paraxanthine is one of three metabolites of caffeine. The literature and [studies](#) have shown that paraxanthine is everything you love about caffeine without the side effects.

Carmichael: What's it like working with something so new?

Solomons: Our partner lab, Ingenious Ingredients, spent eight years working out how to synthesize paraxanthine, and we spent the better part of the last three years formulating this product. It took a long time because no one had used this ingredient. We weren't just doing it for the effect; we wanted it to taste great. It gives you a feeling of clarity, clear focus and really clean energy. The half-life is less than caffeine, so you can drink it later in the day, and your sleep is going to be less affected.

Carmichael: Do you think we'll see more of this though, where science is able to create an ingredient that we haven't been able to before, and we can start developing products that fit needs that maybe we don't even realize we have?

Solomons: I think if this has taught us anything, it's that it is possible. If it's happening here the likelihood is there are people elsewhere finding different metabolites or ingredients or compounds to try and create products out of, too. One of my biggest gripes with functional products was the lack of efficacy. People would make claims around ingredients, but a lot of the time clinical studies were typically cited on the individual ingredients, not on the products themselves.

Carmichael: This isn't just new in terms of the product. Your plan is to market this to the relatively new cryptocurrency and Web3 communities when you launch next month. Why?

Solomons: The builders of Web3 are quickly becoming the taste makers of our generation, and every single industry will eventually have to adapt to the new technologies. We want to be the brand that helps them build. Essentially, we want Update to be to the crypto crowd what Red Bull is to extreme sports.

Carmichael: How will you market to them?

We have a number of different tactics, including building out a digital world, our own metaverse. We're going to have a podcast where we're showcasing the builders of Web3 — the engineers, the heads of product, etcetera. We're going to have different NFT components. We're building out a loyalty program on the blockchain. The idea is you'll get a membership badge similar to how your coffee rewards points work. The membership badge will be an NFT and can live in your OpenSea account. Within it, there will be different achievements represented through NFTs, and those will open new opportunities for a brand to interact with their community.

Carmichael: How will you back up your claims?

Solomons: We want to take the methodology and rigor of big pharma and apply that to a beverage. We're looking into conducting our own clinical study on the entirety of the product and not just citing individual ingredient studies. I think you're going to see an increase in that space, because consumers, at least myself, want that.

Matt Carmichael is editor of What the Future and head of the Ipsos Trends and Foresight Lab.

“Essentially, we want Update to be to the crypto crowd what Red Bull is to extreme sports.”

Why paleo for pets is the new sustainability



Shannon Falconer, Ph.D.

CEO, co-founder, Because Animals

An oft-cited study from UCLA estimated that the impact on the environment from raising meat for pet food is substantial. Yet pets often eat meat that humans don't want, making pet food part of the argument for sustainable consumption by humans. But that can't be the only solution. Nor can we ask our carnivorous cats to go vegan. Shannon Falconer, CEO and co-founder of pet food maker Because Animals, has an additional solution: cultured meats. First up, mouse treats for cats. It's like paleo for pets.



Kate MacArthur: What is Because Animals?

Shannon Falconer: Because Animals is a pet food company that [is making cultured meat for pets](#). Cultured meat is meat. It is not a meat alternative. It is meat that is grown in an alternative way.

MacArthur: Is it made in vats, like beer?

Falconer: We grow it inside of a bioreactor the same way one would grow probiotics or nutritional yeast or beer. We're using quite an old process to produce a new product.

MacArthur: For people who have heard of Beyond Meat or Impossible Foods, how does this compare?

Falconer: They're using plant components to mimic or recapitulate what meat tastes like in the sensory experience. We are actually making meat using animal cells. We take a biopsy from an animal, and then we grow those cells in a bioreactor.

MacArthur: How do you explain this to people who think of cultured meats as not natural?

Falconer: We're trying to demystify it and be as transparent as possible because it does stand to be an incredibly safe and nutritious ingredient, far more than what is currently on offer. Once people begin to understand what it is, a lot of that anxiety will go away.

MacArthur: The first product that you have planned is cultured mouse cookies, right?

Falconer: We chose mouse because mouse is the ancestral diet of the cat. In the wild, cats eat mice, they eat small birds and insects. Things like chicken, beef, seafood, those ingredients are typically in commercial pet food. But they are also the main allergens for our cats and dogs. We saw this as an opportunity to actually grow the protein source that's most evolutionarily appropriate for our pets. So that's why we're focused on mouse for cats, and next is rabbit for dogs.

MacArthur: Was the inspiration for this product environmental or was it more about making food that's better for pets?

Falconer: It's both. We focus specifically on pets because humans are the main consumers of animal-based products and therefore the main species that drives the environmental impact of meat-based foods. Cats, of course, are carnivores in the wild, whereas humans are omnivores.

MacArthur: Then how does this make pet food better for the environment?

Falconer: The argument has been made that pet food is a sustainable industry because it's using those leftovers from the human food supply chain. Think about the fact that humans don't want to eat 50% of an animal. Without pet food as an outlet, animal agriculture as we know it today simply could not exist.

MacArthur: What else is on the horizon for pet food or food for domesticated animals?

Falconer: Being cognizant of the reality that people have been feeding their pets these other meats for decades now, we are looking at eventually also making a cultured salmon and a cultured duck. So, protein sources that are a little more familiar to people, too.

MacArthur: If the environment continues to get worse, how would that change what cats and dogs need in their diet?

Falconer: One of the benefits to growing cultured meat is it is tunable. In theory, we can make products that are almost personalized because they can have nutritional profiles that are more calorie-dense, less calorie-dense and have specific nutrients that are in excess or that are minimal, depending on what the dietary needs are, or if there are medical conditions for a given pet.

MacArthur: Is that something consumers want?

Falconer: That is not something that we're focused on right now. But the point is that our technology could be leveraged in a way that does allow for this personalization.

MacArthur: In your mind, how will the pet food industry look in 2040 or 2050?

Falconer: I would love to see all pet food be made with cultured meat as opposed to slaughtered meat.

Kate MacArthur is deputy editor of What the Future.

"We chose mouse because mouse is the ancestral diet of the cat. In the wild, cats eat mice, they eat small birds and insects."

Signals

What we're reading today that has us thinking about tomorrow

The other oil crisis: A scarcity of cooking oil is raising consumer prices and compounding the global food shortage via [Fortune](#). Indonesia put a near-complete ban on palm oil exports after students demonstrated against a 40% spike in the domestic price of palm oil. The country supplies about half the world's palm oil.

Will Beyond Meat and Impossible Foods survive lab meat's challenge? via [The Motley Fool](#). The emerging science of cultured/synthetic/lab-made meat could usurp plant-based meat substitutes like Beyond Meat and Impossible Foods in the near future. Includes a chart about the environmental impacts of plant and cultured meat.

Restaurants, welcome to the metaverse via [The Spoon](#). Your kids are already able to order food in the metaverse today. Here are seven ways virtual worlds will change restaurants in the future.

Mapping the effect of COVID-19 on food insecurity across the country via [United Way NCA](#). While food insecurity predates COVID-19, it has exacerbated many of the factors that contribute to it. This report identifies the states, people and communities that will be the most food-insecure during and after the pandemic.

Scanning for signals is a type of research that is foundational to foresight work. These signals were collected by the staff of What the Future and members of the Ipsos Trends Network, including Lucy Eisgruber.

Ipsos Coronavirus Consumer Tracker via [Ipsos](#). Ipsos' ongoing poll of consumer attitudes and behaviors regularly features food and shopping data.

Supply chain pain and social media: lessons for brands via [Ipsos](#). Ipsos Social Intelligence Analytics (SIA) has surfaced social media conversations and search data around supply chain issues for essential goods to gas to menu items that reveal key consumer challenges and opportunities for brands to help address pain points.

What makes a new product succeed via [Ipsos](#). The success of your new product depends not just on how good it is but also on how strongly people are attached to their existing solution. A new Ipsos validation framework called SWITCH helps brands understand consumers' propensity to change brands.

America in Flux: moving forward in a changed world via [Ipsos](#). Ipsos' longitudinal digital ethnography study followed families throughout the pandemic. Revisit this recorded webinar to gain an understanding of the American COVID experience, where people are today, and how your brand can connect with and help them move forward.

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Future Jobs to Be Done

The traditional “Jobs to Be Done” framework focuses on the tasks and outcomes people are trying to accomplish and why they hire products and services to help them achieve that outcome. We don’t buy an energy drink; we hire one for focus and energy. We don’t buy food delivery; we hire it for speed and convenience.

Ipsos takes this theory forward with *Future Jobs to be Done* (fJTBD). We envision powerful and plausible future scenarios through strategic foresight. These scenarios help us define the circumstances in which people may find themselves, like an inhospitable climate. What will their new needs be and who might they hire? Then we use fJTBD to tie these scenarios to actions that organizations can take today and tomorrow to help people meet those future needs.

While many needs are enduring and do not change over time (e.g., nourishment), the context of that job (e.g., changing work locations requiring flexible food shopping) will change that job space and the potential solutions and alternatives. Because of this, we often create fJTBD clusters that are higher-order needs-driven. Within each, we can envision more granular fJTBD to illuminate opportunity spaces to meet human needs in new ways.

Trevor Sudano is a senior engagement manager and foresight lead with Ipsos Strategy3.



Potential Future Jobs to Be Done in a new food reality

1

2

3

Help me know whom to trust

Marketing and food go hand-in-hand, for better or worse. Labeling, claims and regulations on both will continue to influence purchase decisions. People will need to know whom to trust. A friend? An influencer? A government agency?

Potential fJTBD:

- Help me understand the science behind food production
- Help me stay up-to-date on the latest plant varieties and their associated benefits

Imagine a world where ... food genealogy becomes just as popular as family genealogy (e.g., broccoli, cauliflower, brussels sprouts, kale, kohlrabi, and cabbage all come from the same base plant).

Help me understand the impact of my food choices

With an evolving food landscape, new methods of production and differing opinions on what is better for you and the planet, people will need guidance to understand how their choices are impacting their bodies and the world around them.

Potential fJTBD:

- Help me calculate the specific nutrition needs of my body and how they may change over time
- Help me track the impact my food choices have on my body and the environment

Imagine a world where ... your grocery receipt includes a predictive “health” score of the total purchase and potential impact (positive or negative) on carbon dioxide emissions.

Help me experience the culture behind the food

Food and culture are inexorably linked, and food is often political (just read up on the challenges at Bon Appetit). People often have a desire for understanding provenance, which can enrich the overall experience.

Potential fJTBD:

- Help me reveal the stories behind foods and dishes and the culture they come from
- Help me explore my own identity and cultural heritage through food

Imagine a world where ... you scan your dish with a camera to reveal the history behind the dish, how it's prepared, and its role in the culture from which it originates.



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What the Future is produced by the Ipsos Trends and Foresight Lab

GAME CHANGERS

