2021

If we build it, will they come?

Lewis Bollard

Recommended Citation

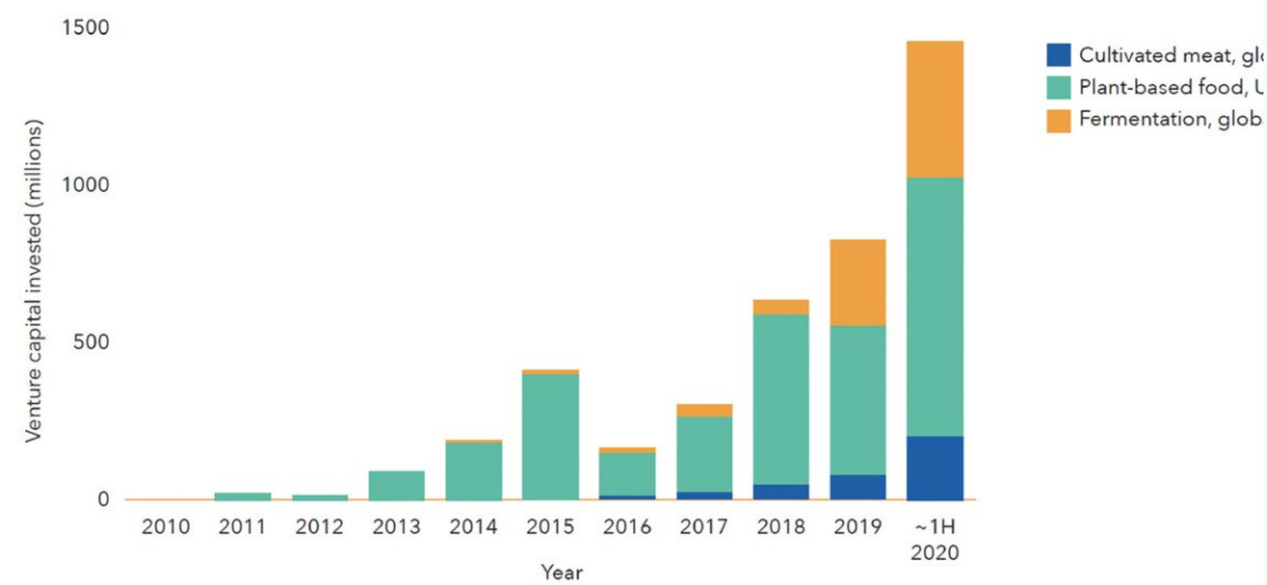
Bollard, L., (2021). If we build it, will they come? Farm Animal Welfare Newsletter, 9 March. https://www.openphilanthropy.org/farm-animal-welfare-newsletter-archive. Open Philanthropy, San Francisco, USA.

If we build it, will they come?

You know things are going well when Bill Gates is talking up the potential of plant-based meat with Anderson Cooper on *60 Minutes*. Gates even told *Forbes* that Beyond Meat and Impossible Foods' success has given him hope for solving meat's climate impact.

Other investors are equally excited. In just the first seven months of 2020, they invested about $1.5B in alternative protein startups (see chart below). The Good Food Institute now tracks 510 companies working on plant-based, cultivated, or fermented alternatives to animal proteins.

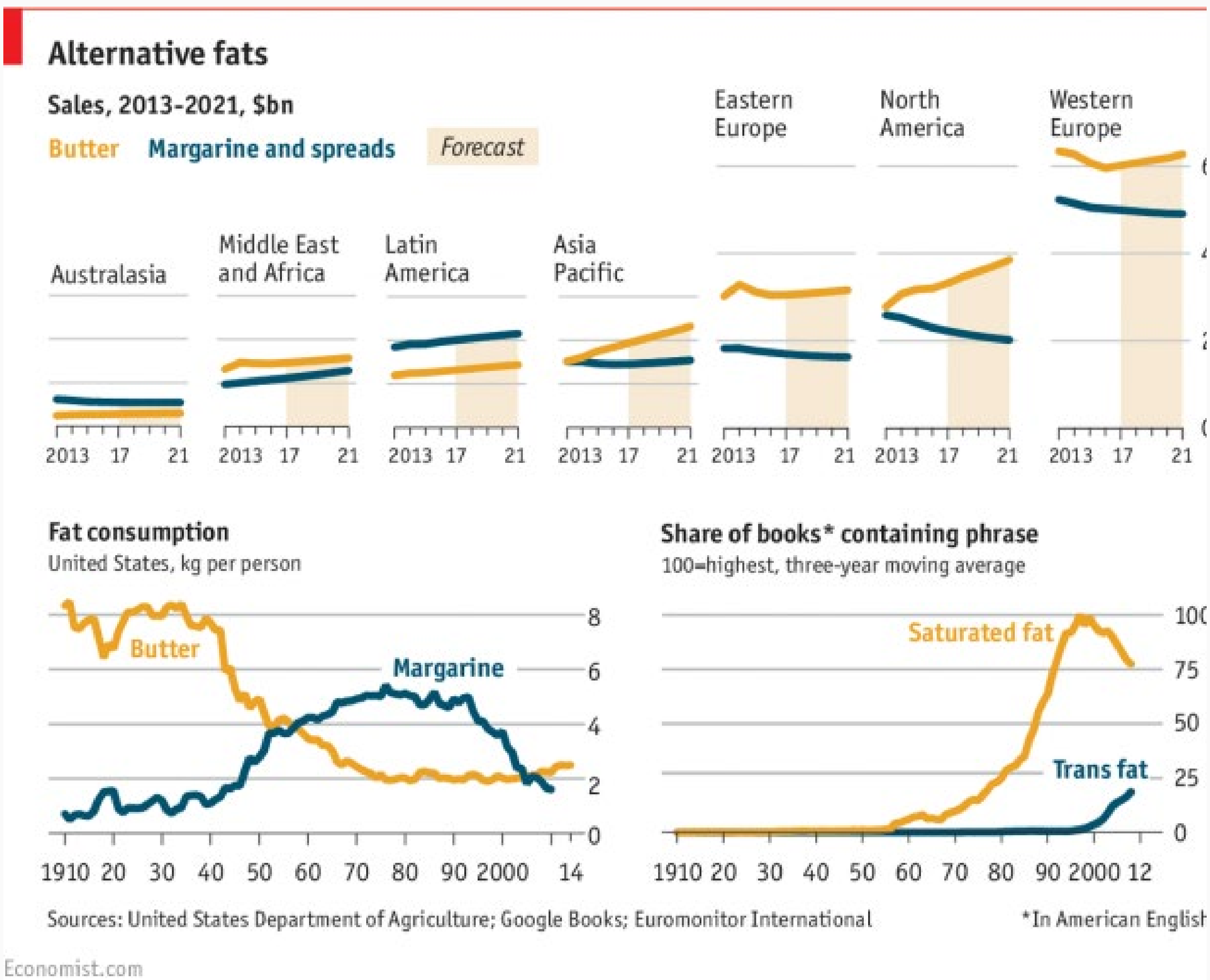
Many of these companies are racing to make alternatives as cheap and tasty as animal products. The implicit assumption is that, if they succeed, consumers will view the alternatives as perfect substitutes and switch in droves. Will they?



Venture capitalists have invested over $4B into startups pursuing alternatives to animal products in the last five years. Notes: includes only VC funding (i.e. not corporate acquisitions or IPOs); "~1H 2020" covers through July 15, 2020. Source: GFI, compiled from Pitchbook data, published in Food Technology Magazine here.

We don't know. There are theoretical reasons to think people will adopt price- and taste-competitive meat alternatives: they will better serve a functional need; meateaters love meat, not its production process. And there are theoretical reasons to think they won't: people are weird, especially about meat — see, e.g., this surprisingly interesting Wikipedia page on the psychology of eating meat (tl;dr: it's not just about price and taste).

There are historical analogies to think people will switch to alternatives: people mostly abandoned whale oil and horse carts once kerosene and automobiles came along. And there are more mixed historical analogies: consider margarine, the only (mostly) plant-based alternative to have become as cheap and tasty as animal products. Margarine did ultimately overtake butter, but only once it was 3X cheaper. And even then it continued to suffer from dairy industry-pushed overregulation and a perception of unnaturalness.



Margarine offers a cautionary tale: people's desire for "natural" can outweigh their desire for cheap. Source: The Economist.

The two most promising data sources are real world sales and surveys. Real world sales data is limited by the lack of a price and taste-competitive item to test. Plant-based meat is about 1% of US retail meat sales by volume, but it's also more than twice the average price of meat and tastes worse to most consumers. The average Burger King franchise sells about 30 Impossible Whoppers per day, compared to about 230 beef Whoppers and an unspecified number of other burgers, but the Impossible ones cost about a dollar more.

A new PhD thesis from Hannah Malan may offer the best real-world data we have to date. She studied the well-advertised introduction of Impossible meat, the meatiest plant-based product, in a UCLA dining hall, where price isn't a factor. She found that 11-26% of students chose the Impossible option, about half of them instead of meat. I recommend her full thesis, including the part where UCLA decided not to roll out Impossible more widely due to cost and to instead "focus on using whole, plant-based foods rather than specialty products like Impossible" (sigh…).

Table 12. Pre, post, and relative percent change in proportion animal-based, Impossible™, and other vegetarian entrée sales at Rendezvous West, UCLA Dining, Fall 2018 and 2019			
All Entrées			
	Pre, % (n=124,792)	**Post % (n=141,321)**	**Relative Change**
Animal-based	83.1	75.8	-9%
Impossible™	0	11.4	
Other Vegetarian	16.9	12.8	-24%
Build-your-own Entrées[a]			
	Pre, % (n=62,739)	**Post, % (n=78,314)**	**Relative Change**
Animal-based	88.4	77.3	-13%
Impossible™	0	15.1	
Other Vegetarian	11.7	7.6	-35%
California Burrito Special[b]			
	Pre, % (n=11,151)	**Post, % (n=13,866)**	**Relative Change**
California Steak	85.9	67.1	-21%
California Impossible™	0	26.2	
California Veggie	14.7	6.7	-54%

In one major UCLA dining hall, 11% of consumers chose the Impossible entree overall, and 26% in a head-to-head with steak and veggie burritos. In this dining hall about two thirds of Impossible meals seemed to come at the expense of animal-based meals, and one third at the expense of other vegetarian options. But vegetarian purchases also fell a bit in the next closest dining hall (which *didn't have Impossible), suggesting that overall about half the Impossible meals came at the expense of animal-based meals. Source: 2018-19 UCLA dining hall swipe data presented in 2020 PhD thesis of Hannah Malan.*

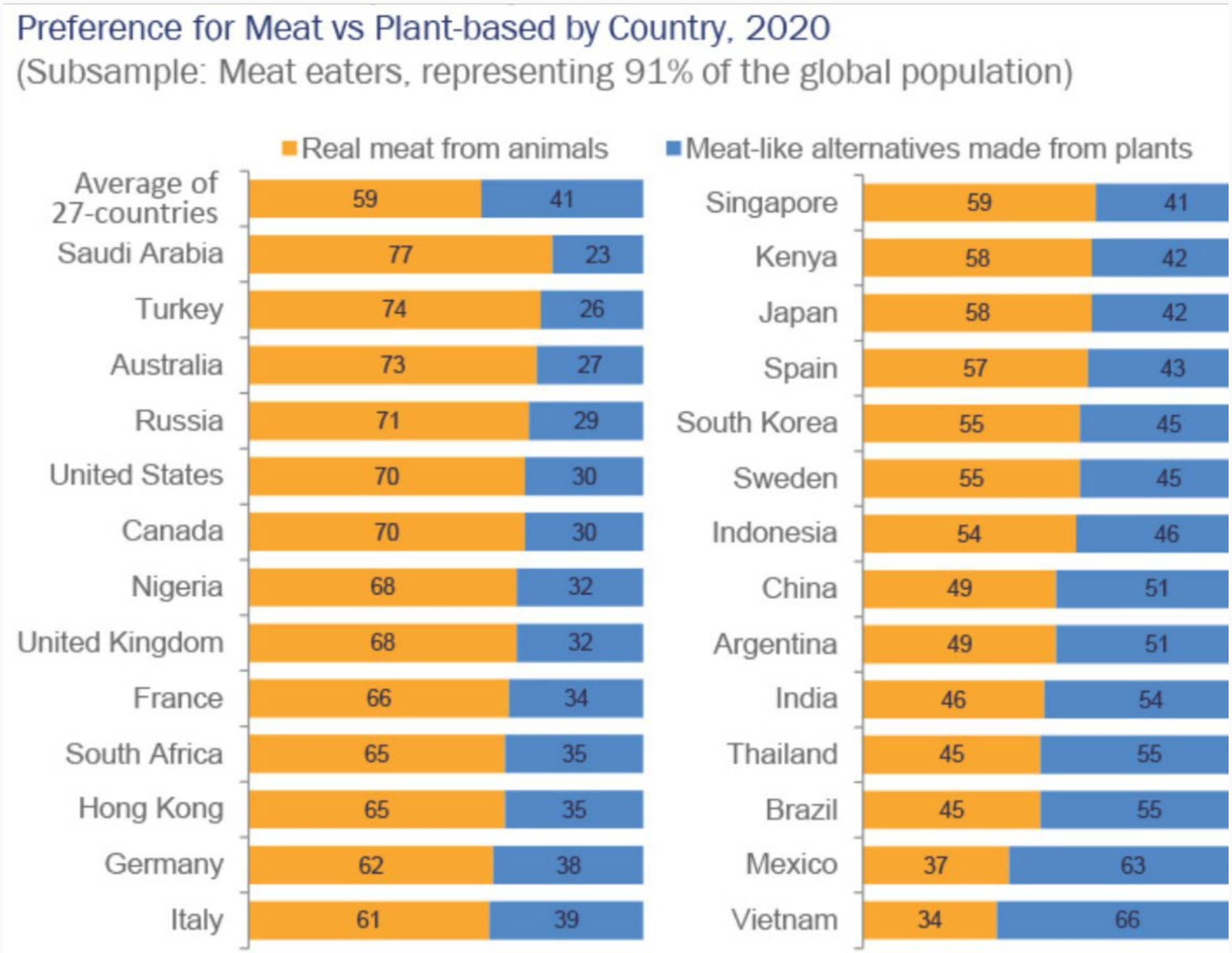
Surveys are even trickier, since they're asking about a hypothetical. This is trickiest for the most hypothetical product, cultivated meat — surveys find anywhere from 5% - 60% of people would choose it, depending on how they're asked. But it's also tricky for plant-based meat — in one survey, which asked respondents to assume the plant-based and beef burgers tasted the same, most said they suspected that the beef actually tasted better. (The authors point out this reflects reality: even when plant-based burgers do taste the same, consumers used to old-school veggie burgers may be skeptical.)

Still, the three best-designed US hypothetical choice experiments I'm aware of found surprisingly similar results: they peg the portion of Americans who'd choose price-competitive plant-based meat over the animal-based kind at 21%, 23%, and 27%.

That's consistent with a newly released survey finding that, if price and taste were equalized, 30% of meat-eating American respondents would choose "meat-like alternatives from plants" over "real meat from animals." The new survey also offers some even more optimistic global findings. It finds an average of 41% of meat-eating respondents across 27 large countries would choose plant-based meat, including 51% in China and 55% in Brazil (see chart below).

We should take these results with caution. Americans consistently tell pollsters they're eating less meat, but consistently eat more of it. One likely source of confusion is what "meat" means: Americans are eating less red meat — they're just replacing it with white meat. Likewise, these surveys may just show that people are open to replacing red meat with plant-based meat. That's especially true for the global survey, since in many cultures the common meaning of "meat" excludes chicken and fish.

Matching chicken and fish on price and taste will also be especially challenging. While ground beef currently averages $4.50/lb at retail in the US, whole chicken averages just $1.60/lb, against an average of $7.70/lb for refrigerated plant-based meat. (Fish is a bit pricier in the US, but in its dominant markets, in East and Southeast Asia, it's even cheaper than chicken.) And while Beyond and Impossible have driven major taste innovation in plant-based ground beef, there's still a long road to matching chicken and fish on taste and texture.



Fully 41% of meat-eating respondents across 27 major nations say they'd choose plant-based meat over animal-based meat if both cost and tasted the same, and had equal nutritional value. This question was part of a larger survey on healthy and sustainable living, which may have biased respondents toward more positive answers for plant-based meat. Source: Globescan June 2020 survey of an online consumer panel of 1K respondents in each country chosen to be demographically representative. They were asked "Assuming each tasted equally good, had equal nutritional value and cost the same, which one of the following do you prefer?" Results here and more on methodology here.

What to make of these results? First, we should be wary of our confirmation bias, as there's now enough data to support most arguments about meat alternatives. If you're an optimist, you're probably focused on the survey above — even beef-loving Argentines choose plant-based! If you're a skeptic, you're probably focused on the UCLA results — only 11% of liberal college students choose the tastiest plant-based meat when it's equally priced and convenient, and heavily promoted. The truth is we don't know which results best model what would happen if alternatives do match meat's price and taste.

Second, that uncertainty means there's value to pursuing multiple strategies to end factory farming and reduce animal suffering. I think meat alternatives are the single most promising strategy we have right now. But, thanks to the surge in investment funding, they're also the least neglected. So I think there's also value to pursuing other proven strategies, like corporate and legislative reforms, alongside the quest for cheaper and better meat alternatives.

Third, factors beyond price and taste matter too. In particular, the case of margarine argues for the need to block meat industry efforts to foist unappealing labels and regulations on plant-based meat. And it shows the need to push back against the meat industry's attempt to brand plant-based meat as "unnatural," a fight in which the meat industry has lately found unnatural allies amongst anti-GMO groups.

Most importantly, though, I think this data shows us the huge potential upside to reaching price and taste parity. Even if "only" 11% of people choose meat alternatives, only half of them instead of meat, they'll spare more sentient beings from suffering than any prior technology. If 50% do, I might retire.

But it's far from inevitable that meat alternatives will become taste and price competitive, especially with the cheapest animal products. We'll likely need not just huge private sector innovation, but also large-scale government funding of R&D over many decades of the sort that Breakthrough Energy, founded by Bill Gates, recently called for. That's the challenge.

***