Good Food Institute

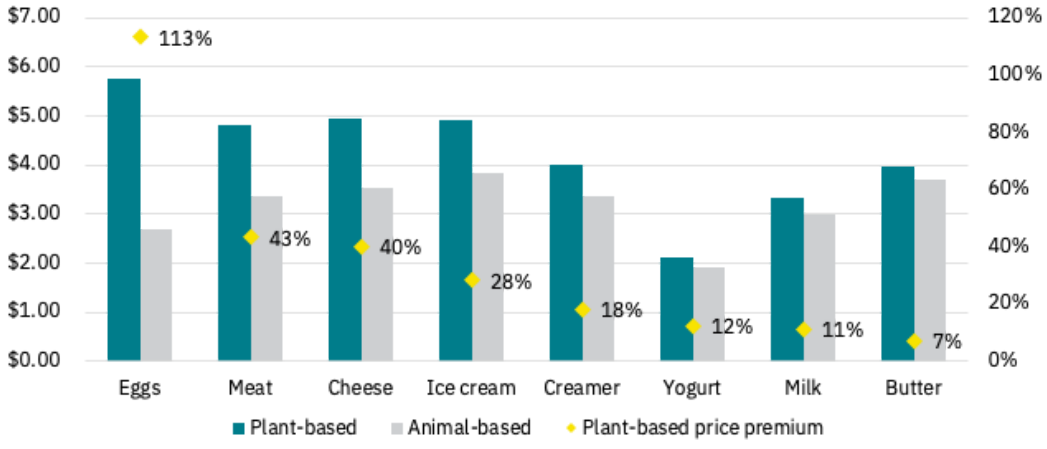
Reducing the price of alternative proteins

Along with taste and accessibility, price is part of the trifecta of key consumer drivers of interest in alternative proteins. To compete with conventional products, alternative proteins must achieve levels of affordability that unlock the largest market—omnivores. Learn about the current price landscape, consumer insights on price, and pathways to price parity.

Plant-based affordability

Plant-based options are currently priced at a significant premium across categories. We anticipate this gap shrinking as plant-based producers increasingly scale up production, achieve economies of scale, and seek price parity with their conventional competitors. Indeed, the price gap is smaller for more developed categories like milk and butter.

Average unit prices of plant-based vs. animal-based products by category and price premium, 2020



Note: Not controlled for variable unit sizes. The data is based on custom GFI and PBFA plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories. Source: SPINSscan Natural Enhanced Channel, SPINS Conventional Multi Outlet Channel (powered by IRI) | 52 Weeks Ending 12-27-2020

PRICE LANDSCAPE: CONVENTIONAL MEAT AND ALTERNATIVE PROTEINS

Plant-based meat premiums are even higher when comparing overall prices to conventional meat on a per-pound basis. Nielsen data demonstrates that, on average, plant-based meat is 2x as expensive as beef, more than 4x as expensive as chicken, and more than 3x as expensive as pork per pound.

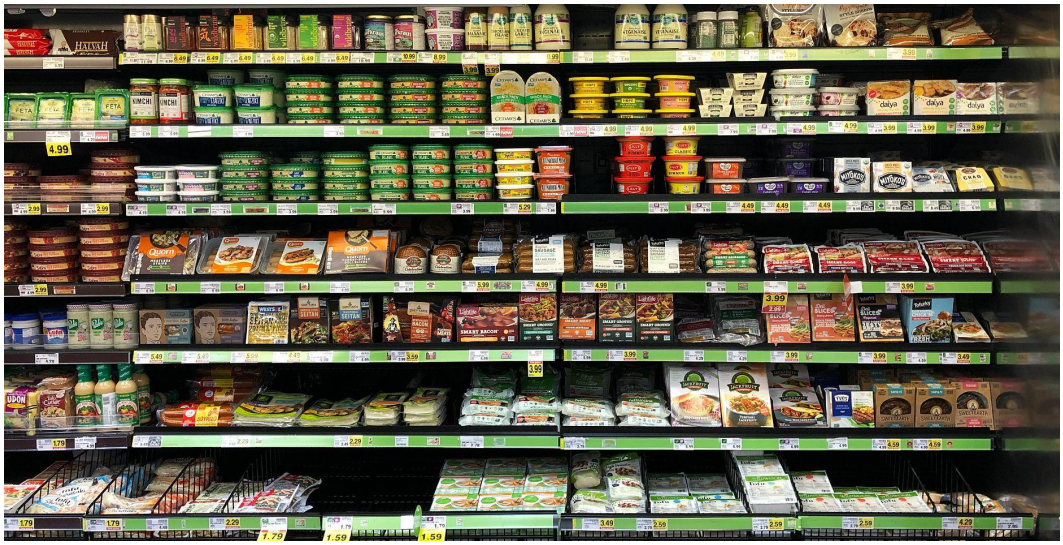
Meat department category performance

Total U.S., 52 Weeks ending Dec 28, 2019

Category	Total pounds sold	% of pounds sold on promotion	% of pounds sold on promotion change vs. year ago	Avg. retail price	Plant-based price premium
Beef	5,349,192,669	38.0%	-0.5	**$4.82**	105%
Chicken	4,930,548,632	37.9%	-0.5	**$2.33**	324%
Pork	2,360,773,609	45.8%	2.1	**$2.78**	255%
Turkey	1,125,408,344	49.6%	2.0	**$2.17**	355%
Meat Alternatives	7,555,188	29.9%	10.6	**$9.87**	–
Total Fresh Meat*	14,059,766,800	40.0%	0.1	**$3.39**	191%
Total Meat*	19,584,977,666	38.9%	-0.4	**$3.53**	180%

Source: **Nielsen Perishables Group**

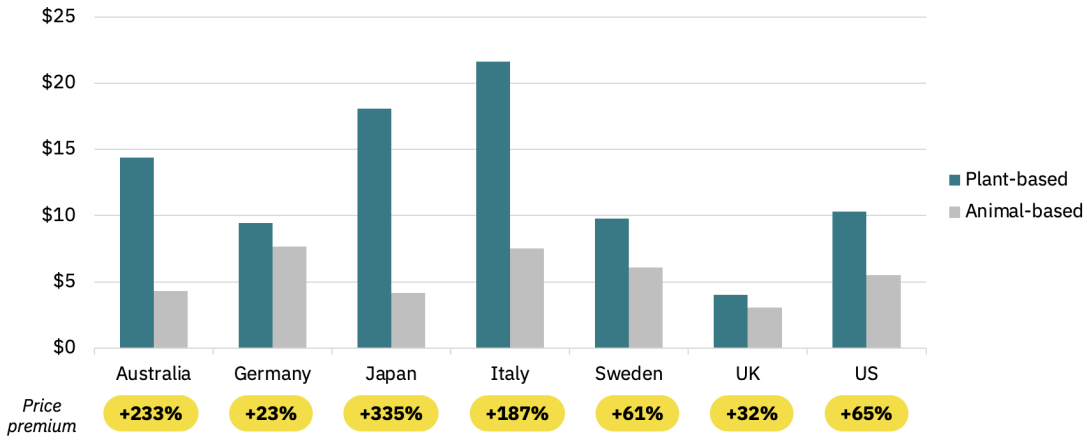
*Note: Total fresh meat includes the categories above it as well as other categories like veal and lamb. Total meat includes total fresh meat and other categories like processed meat, lunch meat, and fully cooked meat.



A plant-based foods set at Ralphs in California. | Image credit: GFI

Further analysis from Kearney shows how plant-based meat premiums vary by nation:

Retail price of plant-based and animal-based burger patties
By nation, in dollars per pound, 2021



Source: Kearney analysis

Data from the **Smart Protein Project** indicates that German consumers are especially likely to purchase their food from discount stores, and that growth rates of plant-based food sales are even higher in discount stores compared to supermarkets, indicating that plant-based food has gone mainstream in Germany.

U.S. RETAIL PRICES

The most affordable fresh plant-based meat options are offered at prices roughly comparable to **organic, grass-fed conventional ground beef**. This implies that plant-based meats are currently catering to customers in the same socioeconomic groups as those who purchase organic, grass-fed conventional beef. However, as the market grows and the target consumer groups expand, it will be important to offer products that can compete with conventional **value** products as well as conventional **premium** products.

Indeed, sales data demonstrates that retailers are seeing the opportunity in and value of adding private label plant-based options. According to **SPINS data commissioned by GFI**, private-label plant-based meat sales grew 72% in 2019. In addition to expanding accessibility, private label plant-based meat products are often lower-priced than branded products. And as consumers **tend to view private label products as more affordable**, this can help shift the consumer's **perceived price** of plant-based proteins for the category as a whole, reducing the perception that they are too expensive.

PRICE CHECK: PLANT-BASED GROUND BEEF

			
Beyond Beef grounds **$9.99/lb**	Impossible grounds **$9.32/lb**	Lightlife grounds **$10.65/lb**	Ozo grounds **$10.65/lb**
			
Pure Farmland grounds **$7.99/lb**	Whole Foods 365 grounds **$9.13/lb**	Kroger Emerge grounds **$7.99/lb**	Albertsons Open Nature grounds **$9.99/lb**

PRICE CHECK: CONVENTIONAL GROUND BEEF

			
Kroger 80% lean ground beef **$5.49/lb**	Kroger Simple Truth Organic 85% lean grass-fed ground beef **$6.99/lb**	Albertsons 80% lean ground beef **$3.47/lb**	Albertsons Open Nature grass-fed Angus beef grounds **$7.49/lb**

Note: The above data lists point-in-time, non-promotional prices, calculated per pound for products at select stores in 2021.

Consumer insights on price

Understanding how consumers prioritize price and perceive the value of plant-based meat, eggs, and dairy can support business decisions across the supply chain—supporting further R&D investment, influencing ingredient selection, and considering marketing messaging and product pricing.

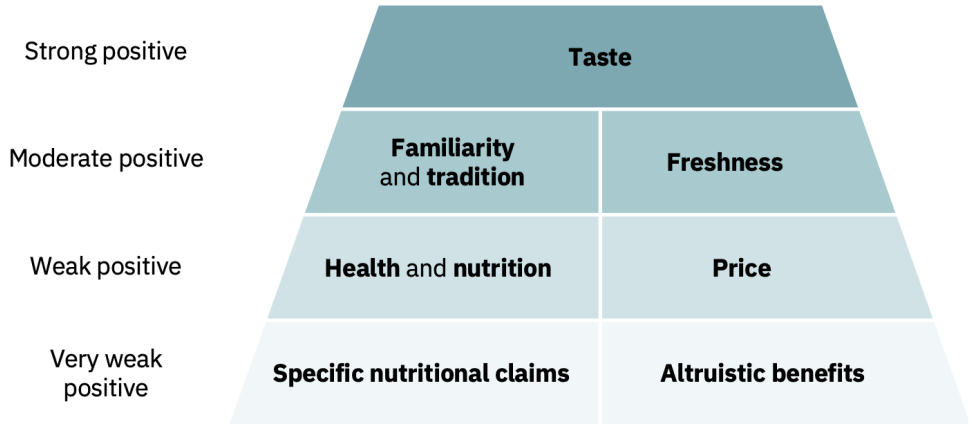
HOW CONSUMERS PRIORITIZE PRICE

Will lower prices convert to more sales? How much are consumers willing to pay for plant-based meat? A study GFI conducted with Mindlab investigated price as a driver of purchase intent and the willingness of consumers to pay more for plant-based products.

Price is a barrier

When explicitly asked, consumers ranked price as the second-most important factor (behind taste) to encourage or discourage them from purchasing a plant-based product. In actual implicit purchase decisions affordability fell in the rankings, but was still correlated with increased purchase intent. The below graphic combines results from implicit and explicit tests.

Primary motivators for purchasing decisions



Source: **GFI & Mindlab study**

In the current market landscape in which the price of alternative protein products are higher than those of conventional products, price can limit consumer adoption. According to a Mintel study, among adults who do not currently consume meat alternatives, 20 percent point to **high price as a barrier**:

Why don't you eat plant-based proteins? Please select all that apply.

66%
I prefer meat

20%
Too expensive

18%
Not enough appetizing options

Source: **Mintel, "U.S Plant-based Proteins" 2021**

Similarly, for those eating plant-based proteins less often than they did previously, more than a quarter of consumers point to affordability as a barrier.

Why are you eating plant-based proteins less often? Please select all that apply.

50%
I prefer meat

26%
Too expensive

22%
Not enough appetizing options

Source: **Mintel, "U.S Plant-based Proteins" 2021**

> **"You'll buy the product once based on novelty, you'll come back if the taste was good and if there are benefits such as nutrition and sustainability, and you'll buy it in the long run if the value is right."**
> —Nick Halla, Senior Vice President for International at Impossible Foods

Lower-income consumers are underrepresented in plant-based meat purchasing, while higher-income consumer over-index:

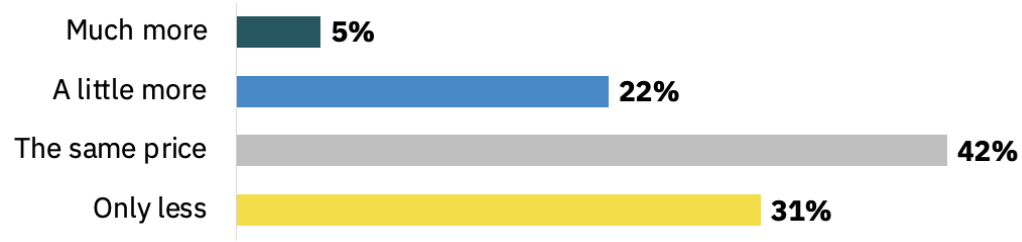
Plant-based meat purchasing, by income, 2020

Note: the data presented in this graph is based on custom GFI and PBFA plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories. Source: NCP, All Outlets, 52 weeks ending 12-27-20

WILLINGNESS TO PAY MORE

For most consumers, closing the price gap would likely increase the purchase intent of plant-based products. The largest group of consumers is willing to pay only the same price for plant-based products as for their conventional counterparts. Approximately ¾ of consumers are willing to pay the same price or less.

How much would you pay for a plant-based alternative relative to its animal-based product counterpart?



Source: **Mintel, "Plant-Based Proteins," May 2020**

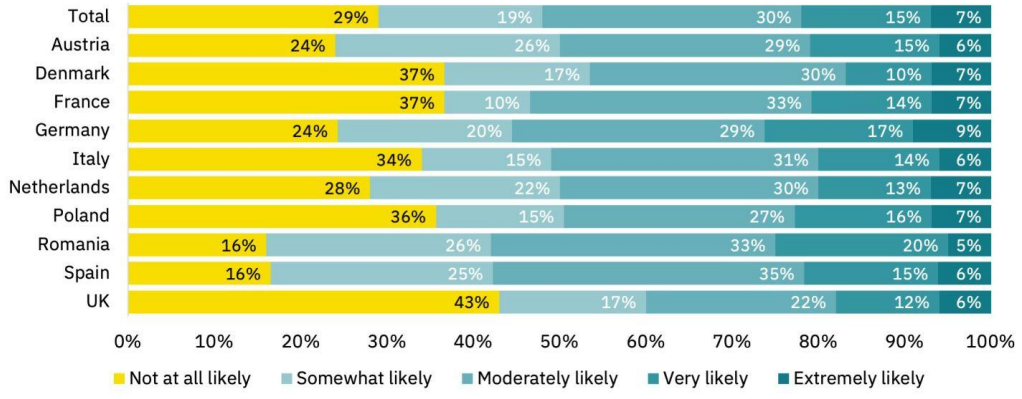
Some groups reported even more willingness to pay more for plant-based alternatives, suggesting that these groups are likely early adopters of these products:

- Forty-six percent of **flexitarians** said they would pay either much or a little more for plant-based products.
- Forty-five percent of **Millennials** said they would pay either much or a little more for plant-based products.

Precisely how much more are consumers willing to pay? A **survey from DuPont** found that U.S. consumers are willing to pay **5% to 10% more** for the right meat alternative than for comparable traditional products.

Compared to U.S. consumers, European consumers show more willingness to pay more for plant-based meat, according to a **Smart Protein Project consumer survey** of several European countries.

Imagine that you've had the opportunity to try a plant-based meat that has the identical taste and texture as animal-based meat. How likely are you to pay a higher price for plant-based meat than for animal-based meat?



Total: n= 7590 | Austria n=757 | Denmark n=773 | France n=750 | Germany n=757 | Italy n=759 | Netherlands n=750 | Poland n=757 | Romania n=754 | Spain n=774 | UK n=759

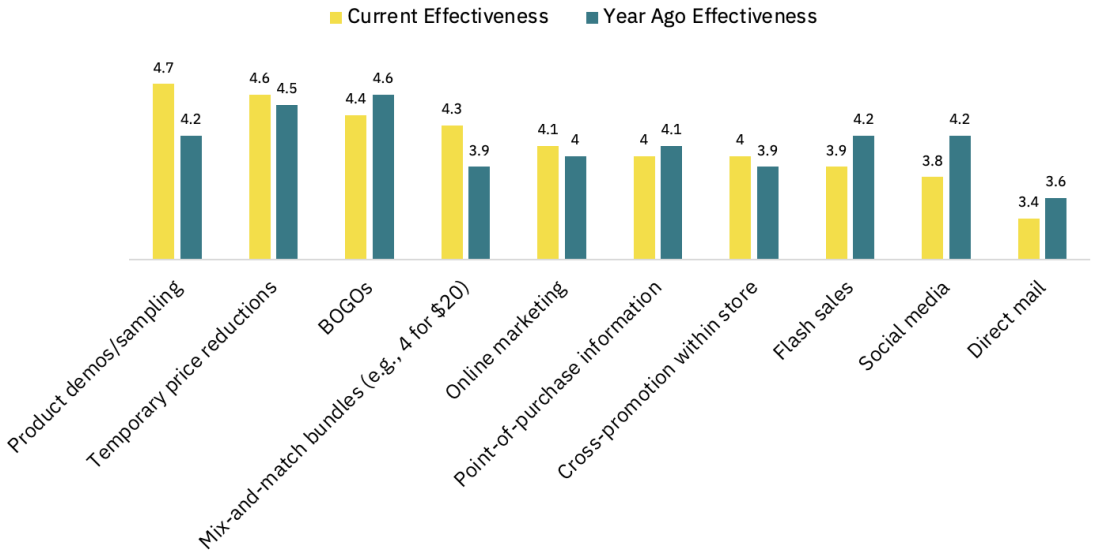
Source: Smart Protein. **What consumers want: A survey on European consumer attitudes towards plant-based foods.** 2021

And while price competitiveness for all consumers is a long-term objective of the plant-based protein industry, it is likely that today's plant-based meat consumer may be **extra valuable** to retail and foodservice brands, based on demographics (skewing younger), or behavioral and psychographic attributes (high basket and check sizes). Thus, while the current market may be somewhat limited by price premiums, these products contribute to long-term strategy in manufacturer product portfolios and retailer assortment decisions.

PRICE PROMOTION HELPS MOVE THE NEEDLE

According to Progressive Grocer's **survey of U.S. supermarket operators**, in pre-Covid, temporary price reductions were second only to demos in effectiveness for marketing meat products overall. Temporary price reductions are a well-known strategy for incentivizing product trial. Other price promotions like buy-one-get-one deals and mix-and-match bundles, were also said to be moderately effective.

Effectiveness of promotional activities
Rated on a scale of 1-6, where 6 is extremely effective



Source: **Progressive Grocer market research**, 2020

Pathways to price parity

EXISTING MOMENTUM: PLANT-BASED MEAT

- In early 2021, Impossible Foods **announced its second price reduction within a year** for its plant-based grounds, decreasing the suggested retail price to $9.32/lb, a 20% drop.
- Beyond Meat has said that it aims to underprice animal protein in at least one category **by the end of 2024**.
- Impossible Foods and Beyond Meat have also launched value packs:

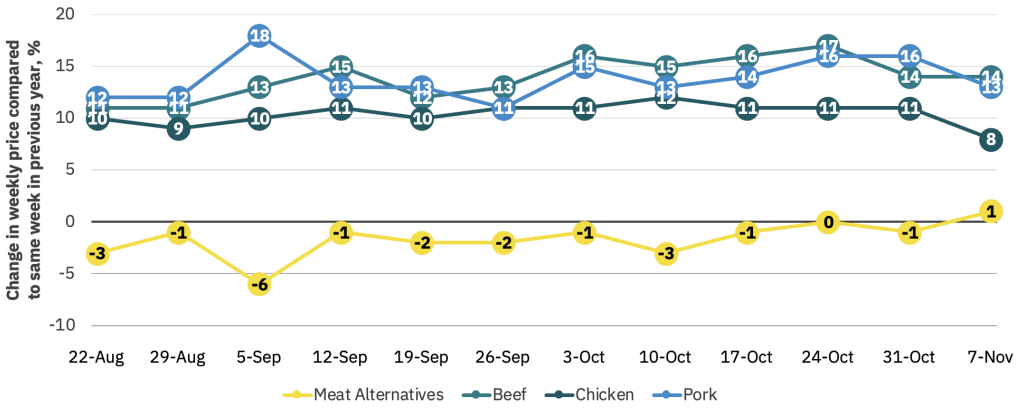
    - A Beyond Meat value pack of patties sold at Costco has a retail price of $6.67/lb.
    - An Impossible Foods value pack of patties sold at Costco has a retail price of $7.00/lb.
- In 2020, **Trader Joe's launched its plant-based burger patties** made with pea protein priced at $4.49 for two quarter-pound patties.
- Also in 2020, **Kroger launched its plant-based chicken grounds** priced at $6.99 for a one-pound package.
- In October 2021, **Aldi launched its Ultimate No Beef Burger** in UK stores, priced at £1.99 for two quarter-pound patties, or approximately $5.30 per pound.

"To democratize our brand, we've got to bring the price down."
—Chuck Muth, Chief Growth Officer, Beyond Meat (formerly)

RECENT PRICE CHANGES: PLANT-BASED VS. CONVENTIONAL MEAT

Progress on price parity is not only affected by reducing plant-based meat production costs, but also by market effects that raise conventional meat costs. Recent pressures such as higher input costs, meatpacker labor issues, higher worker wage rates, and supply chain interruptions have illustrated the relative volatility—and **price instability**—of the conventional meat supply chain. In fall 2021, conventional meat categories like beef, chicken, and pork have seen double-digit price increases compared to the same week in 2020, while plant-based meat prices compared to prior year have decreased or remained the same.

Change in weekly price compared to same week in previous year, 2021

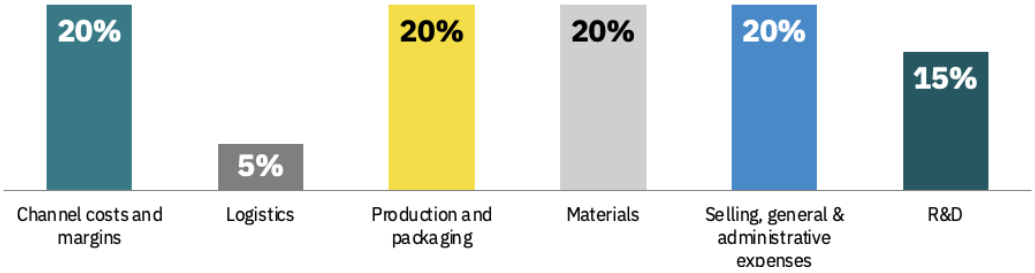


Source: **IRI CPG Inflation Tracker**, Multi-Outlet and Convenience, latest 12 weeks, price per unit
Price per unit changes can be due to one or more of four factors: list price changes, changes in price promotions, trading up or down to higher or lower priced products, and finally, purchasing of larger or smaller packages.

Interruptions like this and the resultant price hikes of conventional categories go hand-in-hand with the production inefficiencies of the conventional meat supply chain. A category like conventional beef requires demand prediction **16 to 24 months in advance** to raise cattle, presents complex carcass balancing problems, and is not responsive to shifting demand across species. As GFI VP of Science and Technology Liz Specht **writes in WIRED**, alternative proteins offer efficiencies across each of these areas, which may eventually translate into price efficiencies.

COST DRIVERS OF PLANT-BASED MEAT

Sample cost drivers on a per-unit-sold basis



Note: This is a sample cost composition. Actual cost drivers are highly variable depending on the company and stage of scale-up.
Source: GFI estimate.

Cost	Status and Outlook
Channel costs and margins (e.g., retailer margins and fees, manufacturer margins)	• The majority of cost structures for plant-based meat currently operate on a high-margin/low-volume model compared to commodity meat. As the industry scales, there may be more opportunities for products to move toward a low-margin/high-volume model. • Higher volumes may improve bargaining power with retailers that may move the industry toward smaller retailer margins. • **Outlook**: Per-unit costs can come down **significantly**.
Logistics (e.g., transportation and distribution costs)	• Volume increases will allow for better rates and better utilization of high fixed costs. • **Outlook**: Per-unit costs can come down **moderately**.
Production and packaging	• Increases in volume allows for discounts and amortizes high fixed costs. • Plant-based brands are continuing to re-invest funds in production capacity, a necessary step to scale up. • **Outlook**: Per-unit costs can come down **significantly**.

Materials (e.g., ingredients)	• Volume increases allow for discounts and input innovation translates into cost savings. • Over time, and with scaling, we expect materials costs to come down in absolute terms, but for materials to make up a larger % of total costs as the category moves toward commoditization. • **Outlook**: Per-unit costs can come down **significantly**.
Selling, general and administrative expenses (SG&A)	• There are currently high fixed costs reflective of the extra level of upfront marketing and sales efforts required by plant-based brands challenging the established commoditized conventional meat category. • Variable costs will scale slower than sales volume increases. • **Outlook**: Per-unit costs can come down **significantly**.
R&D (research and development)	• High fixed costs will decrease over time as dominant designs emerge. • Plant-based brands are continuing to re-invest funds into new technology, a necessary step to fill new product white spaces. • Variable costs will scale slower than sales volume increases. • **Outlook**: Per-unit costs can come down **significantly**.

In many areas, costs can decrease with scaling and efficiencies:

Agronomic yield improvement (both overall crop yields and protein content)

Shared supply chain (multiscale co-man., transport, **pooled procurement**)

Process & facility scaling (production, extraction, fit-to-purpose design)

Low-cost extraction (lower inputs, higher throughput & yield)

By-product valorization (oil, starch, fiber, extracts)

Localized production (farm, processing, food manufacturing)

Scaling novel protein supply chains (like duckweed, seaweed, and pea)

De-risking crop production (market data, insurance, price guarantees, tech. assistance)

A note on R&D costs

There are additional considerations for alternative protein companies in setting prices that make sense for the development of the company. GFI director of science and technology Liz Specht writes in a **blog post**:

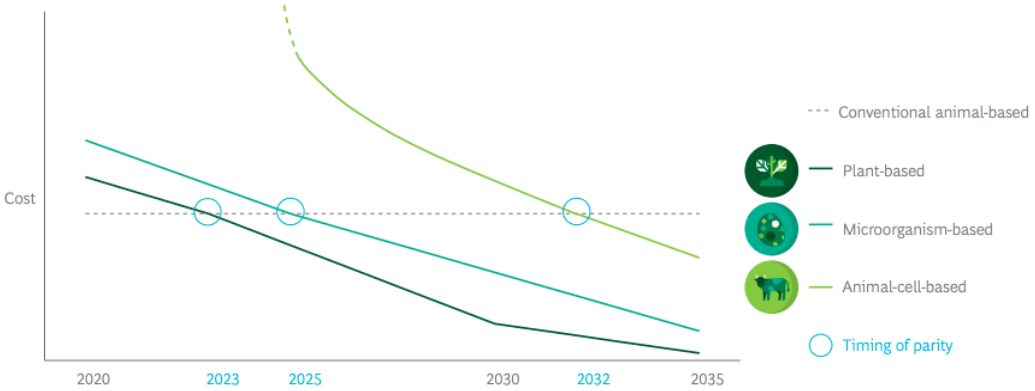
- **R&D costs.** Like in any other cutting-edge field, alternative protein innovators have substantial R&D expenditures that they need to recoup. This is further magnified by the fact that many of these companies have been largely funded by venture capital, which leads to different positioning:
    - The incentive structure for companies focusing on novel technologies and other monetizable intellectual property 1) demands substantial R&D investment and 2) motivates near-term production decisions that may prioritize IP protection above cost reduction.
    - For example, some companies are producing unique, proprietary ingredients in-house at present because these ingredients are essential elements of their protected value proposition.
    - As these companies secure their market position and begin to scale, it will be straightforward to substantially reduce the cost of these ingredients via contract production that taps into 1) greater economies of scale and 2) mass production expertise.

Procuring **extrusion equipment** and establishing **co-manufacturer line time contracts** are further examples of current challenges that may be ameliorated as the sector grows.

PROJECTIONS ON PRICE PARITY

Blue Horizon and BCG published a **report** that forecasts when each alternative protein category will reach cost parity with conventional meat, emphasizing that each alternative protein production platform is currently at a different stage.

Relative timing of cost parity for alternative proteins with realistic taste and texture



Sources: Blue Horizon and BCG analysis, expert interviews; industry report. Note: This analysis includes illustrative data for US and EU; variations by product group and geographic area are omitted for clarity.

PARING DOWN THE PRICE: CULTIVATED MEAT

$325,000	In 2013, the first cultivated burger was produced, costing a **total of $325,000**.
$35	The Chicken, SuperMeat's **cultivated meat restaurant experience** in Israel, offers a cultivated chicken burger at $35.
$17.29	Eat Just's cultivated chicken **on the menu** at Singapore restaurant 1880 has a price point of 23 Singapore dollars, about $17.29 in U.S. dollars.

CULTIVATED MEAT CAN BECOME COST COMPETITIVE

GFI's cultivated meat **techno-economic assessment** found that at a production cost of **$2.92 per pound** (or $6.43 per kilogram), cultivated meat could be cost-competitive with some conventional meats by 2030 and serve as an affordable ingredient for plant-based and cultivated meat blends.

- This figure was calculated for a ground meat product containing 100% cultivated meat. Blended or hybrid products are anticipated to have reduced costs and environmental impacts.
- This figure strictly reflects the cost of goods sold and does not include markup by the manufacturer or retailer. Thus, this is the production cost rather than the price that consumers would see.
- This cost reflects the lowest-cost scenarios studied, and achieving them will require concerted research efforts to improve the process and inputs in addition to securing favorable financing arrangements.

View UC Davis's scenarios for cultivated meat costs and calculate your own estimates with their **cost calculator**. **>>**

In December 2020, Eat Just launched the commercial sale of its cultivated chicken bites at restaurant 1880 in Singapore. | Image credit: Eat Just

FURTHER READING

Lewis Bollard **estimates** that Beyond Meat's cost of production fell from $4.50/lb to $3.50/lb from 2019 to 2020. **>>**

GFI director of science and technology Liz Specht explains why plant-based meat will ultimately be **less expensive** than conventional meat. **>>**

GFI's **Plant Protein Primer** compares plant protein ingredients on key attributes including price. **>>**

What pricing strategy should you pursue? Download GFI's **startup manual** for helpful context about pricing and other components of your marketing mix. **>>**

The last word

"It really boils down to scale and optimization. Developing operational efficiency is something that takes years, and the animal ag industry has a multi-decade head start on this. As the quantity produced goes up, we'll be able to drive up operational efficiencies."
—GFI supply chain manager Zak Weston to Vox

About GFI

The Good Food Institute is a 501(c)3 nonprofit organization developing the roadmap for a sustainable, secure, and just protein supply. We identify the most effective solutions, mobilize resources and talent, and empower partners across the food system to make alternative proteins accessible, affordable, and delicious.