

# Plant-Based Foods Poised for Explosive Growth

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**Bloomberg  
Intelligence**



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# Executive Summary

If alternative-meat and dairy product sales and penetration continue to grow, the global plant-based alternatives market could swell to \$162 billion in the next decade from \$29.4 billion in 2020, based on our scenario analysis. Leaders including Beyond Meat, Impossible Foods, Eat Just and Oatly are adding to the momentum, as new and traditional companies push innovation and customer acceptance.



# Alternative Meat and Dairy Growth to Outpace Traditional Foods

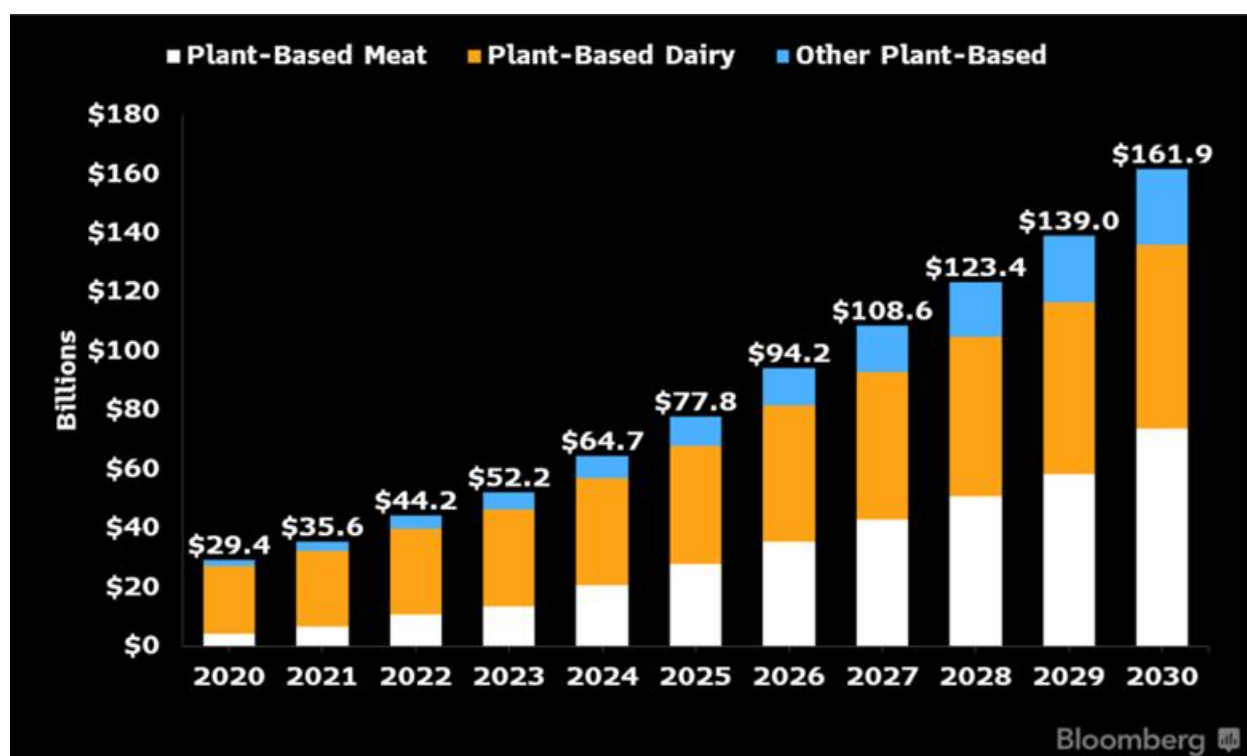
Global retail sales of plant-based food alternatives may reach \$162 billion by 2030, or 7.7% of the expected \$2.1 trillion global protein market. We expect the sales growth for plant-based meat and dairy alternatives will outpace conventional products, supported by innovation, increased production capacity, lower retail prices, broader distribution gains and consumer acceptance.

## Meat and Dairy-Alternative Adoption Grows

Our scenario analysis suggests sales of plant-based meat and fish may reach 5% of the total market. Plant-based dairy sales are largely comprised of milk alternatives, which is a fairly mature market, enabling 10% penetration of the total dairy market. Other alternative dairy products -- including yogurt, ice cream, cheese and butter -- are small today but will aid overall growth.

Plant-based condiments and dressings as well as eggs and other items are still fairly nascent. These items may grow to \$25.7 billion from \$2.3 billion by 2030.

### Total Global Plant-Based Retail Market Size



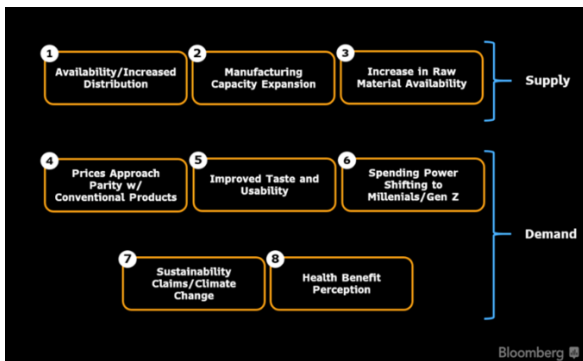
Source: Bloomberg Intelligence, OECD FAO Agricultural Outlook 2021-2030, GFI 2020 State of the Industry Report

## The Many Catalysts to Watch for Plant-Based Food Growth

Demographic and industry catalysts should help accelerate growth of plant-based alternatives and help differentiate it as a long-term trend vs. a fad. This includes expansion of retail distribution points, growing consumer interest in healthier lifestyles, more consistent supply as companies improve forecasting and manufacturing capabilities, greater raw material availability, achieving price parity with conventional products and ongoing trials at restaurants.

Beyond Meat, Impossible Foods and Oatly are driving awareness through restaurant and retail partnerships. Larger food companies like Tyson (Raised & Rooted and Jimmy Dean brands), Kellogg (Morningstar) and Nestle (Garden Gourmet, Sweet Earth and Wunda) are using their scale to drive distribution and are working with retailers on promotions and marketing.

### Catalysts for Growth



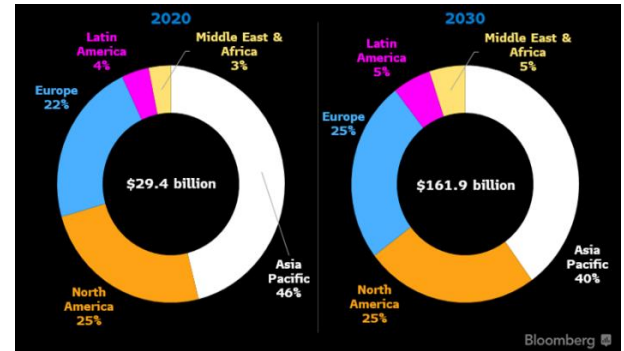
Source: Bloomberg Intelligence

## Asia May Lead World With \$64.8 Billion in Sales

The Asia-Pacific region may command the largest share of the global plant-based market, with our scenario analysis suggesting the market could reach \$64.8 billion by 2030, up from \$13.5 billion in 2020. The region is expected to exceed 5 billion people by 2030, straining its resources. We believe this will drive strong demand for plant-based protein. Both North America and Europe may account for about \$40 billion over that same timeframe, with Middle East and Africa reaching \$8.2 billion and Latin America \$8.8 billion.

Asia Pacific, North America and Europe may contribute similar levels of sales for alternative meats (about 29%), Asia may drive the bulk of alternative dairy (59%) and North America and Europe could both account for about 35% of other plant-based product sales.

### Asia May Continue to Lead in Sales



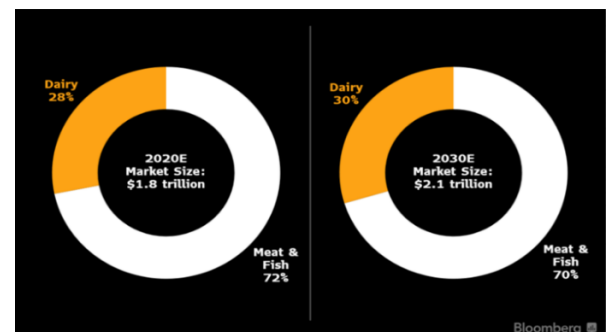
Source: Bloomberg Intelligence

## Protein Demand Set to Rise With Population

Concerns about sustainably feeding a growing global population are driving interest in plant-based products that can serve as a replacement for conventional proteins. The global population is expected to hit 8.5 billion people in 2030, according to the United Nations, up from 7.8 billion in 2020.

Animal and dairy protein demand is poised to reach \$2.1 trillion by 2030, based on our scenario analysis. Of this, animal protein could account for \$1.5 trillion as growing middle-class populations in developing economies seek to eat more meat as incomes rise. Dairy is also poised to expand, reaching \$623 billion in size by 2030.

### Global Protein Retail Market Size



Source: Bloomberg Intelligence, OECD FAO Agricultural Outlook 2021-2030

## Restaurants and Foodservice Play Important Role

Restaurants and other foodservice companies will play a critical role in driving long-term trial and consumption of plant-based products. Large restaurant chains -- including Starbucks (which sells Oatly milk beverages), Burger King (seller of the Impossible Whopper), and Del Taco and Taco Bell (both sell Beyond Meat products) -- and others have played a critical role in advertising menu items and driving customer interest and trial orders. Restaurants are an easy venue to try a plant-based meat or dairy product and can influence shopping for at-home consumption.

The pandemic slowed plant-based progress as restaurants pared back menu items and delayed new product introductions. Burgers and sausage alternatives have been the most prevalent items. We expect faux-chicken to become the focus over the next 12 months.

### Top Restaurant Chains Featuring Plant-Based Items

Top Quick-Service Chains	Points	Top Casual Dining Chains	Points
Del Taco	10	Yard House	10
Jamba Juice	10	Red Robin Gourmet Burgers	9
Qdoba	10	Carrabba's Italian Grill	8
Panera Bread	9.25	Golden Corral	8
Chipotle Mexican Grill	9	Cheesecake Factory	7.5
Jason's Deli	9	California Pizza Kitchen	7
White Castle	9	Dave & Buster's	7
Dunkin' Donuts	8.5	Millers Ale House	7
Moe's Southwest Grill	8	BJ's Restaurant & Brewhouse	6.5
Starbucks	8	P.F. Chang's China Bistro	6

Note: The Good Food Institute Restaurant Scorecard shows chains graded on a 10-point scale evaluating multiple aspects of their menu and promotion.

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Source: Good Food Institute 2019 Restaurant Scorecard

## Methodology for Growth Scenario

Our scenario analysis for the global protein market size through 2030 utilizes OECD consumption forecasts for the protein and dairy markets, including beef, veal, pork, poultry, sheep, fish, fish meal and oil, fresh dairy products, butter, cheese, skim and whole milk powder, whey powder and casein, along with Euromonitor and other industry data. Scenarios for plant-based penetration of the total market generate the potential retail market size. Plant-based meat penetration follows the adoption curve of alternative milks when that market was developing.

Alternative dairy is driven largely by plant-based milks, which is a more mature market. Smaller, higher-growth categories such as yogurt, cheese and butter will help overall penetration but at a more moderate pace.

### Data Sources Used:

- OECD meat consumption forecast data including beef, veal, pork poultry, sheep, fish, fish meal and fish oil
- OECD dairy consumption forecast data including fresh dairy products, butter, cheese, skim and whole milk powder, whey powder and casein
- Euromonitor data on global alternative dairy and meat market sizing and company share data
- Good Food Institute 2020 State of the Industry Report

# Impossible or Beyond? Faux-Meats May Hit \$74 Billion in Sales

If alternative-meat product retail sales growth and penetration mimic plant-based milk, the market could expand to \$74 billion in the next decade, from \$4.2 billion in 2020, based on our growth scenario. The increased commercial availability of substitute meat products from Beyond Meat, Impossible Foods, Kellogg, Tyson and others is adding to momentum.

## Greater Availability Drives Alternative Meat Sales

The global plant-based alternative-meat market may grow to \$28 billion by 2025, based on our scenario analysis. This could translate into a \$74 billion opportunity by 2030 if sales growth and penetration levels mimic those of plant-based milks to reach 5% of the total meat and fish market. Plant-based meat accounted for just 0.3% of total meat sales in 2020, but growth is accelerating as products become more widely available, consumer awareness grows, prices come down and the perceived health and sustainability attributes gain traction.

Should the pace of these drivers be stronger than expected, plant-based meat retail sales could reach \$118 billion in 2030. A slower uptake, limited by regulatory issues and supply constraints could result in a \$37 billion market size.

## Plant-Based Meat Retail Market Scenario, \$bln

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Faster Growth</b>	\$4.2	\$13.2	\$20.2	\$27.5	\$34.8	\$42.2	\$56.8	\$71.5	\$86.9	\$102.4	\$118.3
% Penetration of Total Market	0.3%	1.0%	1.5%	2.0%	2.5%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%
<b>Base Case</b>	\$4.2	\$6.6	\$10.8	\$13.7	\$20.9	\$28.1	\$35.5	\$42.9	\$50.7	\$58.5	\$73.9
% Penetration of Total Market	0.3%	0.5%	0.8%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	5.0%
<b>Slower Growth</b>	\$4.2	\$5.3	\$6.7	\$11.0	\$13.9	\$18.3	\$21.3	\$25.7	\$29.0	\$33.7	\$37.0
% Penetration of Total Market	0.3%	0.4%	0.5%	0.8%	1.0%	1.3%	1.5%	1.8%	2.0%	2.3%	2.5%

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Source: Bloomberg Intelligence, OECD FAO Agricultural Outlook 2021-2030, GFI 2020 State of the Industry Report

## Competition Ratchets Up, But Aids Total Growth

Innovation in the alternative-meat market is well underway, thanks to the growing success of upstarts like Beyond Meat and Impossible Foods. More traditional food companies have rapidly entered the space, including Tyson, Kellogg, Conagra (maker of the Gardein brand), Kraft Heinz (Good Planet vegan cheeses), Hormel (Happy Little Plants), Nestle, Maple Leaf (Lightlife) and Monde Nissin (Quorn). Private-label versions of these products are also emerging, such as Kroger's Simple Truth brand. These companies can

wield their manufacturing and distribution scale to drive sales.

While this increases competition, the introduction of more products will drive consumer interest and engagement and help bring prices closer to parity with meat products -- a key catalyst to sustained growth.



## Top 5 Company Dollar Share, Meat Alternatives

	2016	2017	2018	2019	2020
<b>Global Share</b>					
Sagamiya Foods	2.6%	2.6%	2.7%	3.0%	3.1%
Beyond Meat	0.1%	0.2%	0.4%	1.1%	2.2%
Monde Nissin	1.6%	1.7%	1.9%	2.0%	2.2%
Kellogg	1.7%	1.8%	1.8%	1.8%	1.7%
Asahico	1.8%	1.7%	1.6%	1.5%	1.4%
<b>North America Share</b>					
Beyond Meat	2.3%	3.8%	6.1%	13.9%	23.2%
Kellogg	29.4%	30.5%	28.5%	24.0%	18.0%
Maple Leaf	1.7%	6.2%	8.1%	9.1%	10.3%
Conagra	9.3%	11.1%	11.0%	8.8%	6.5%
Hain Celestial	4.8%	4.9%	4.9%	4.3%	3.7%

Note: Tofu included Bloomberg

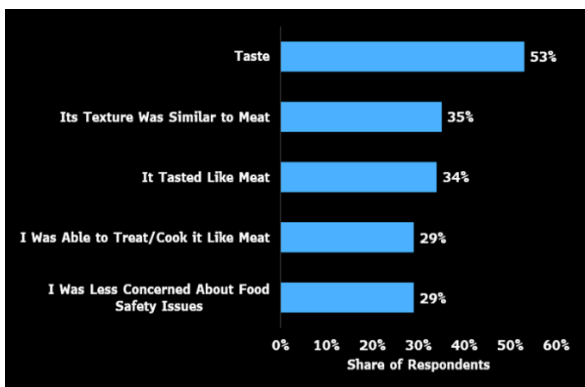
Source: Euromonitor Passport

## Prime Grocery Placement, Price Drives Sales

The plant-based alternative meat market has the potential to significantly increase in size if sales growth and penetration levels mimic plant-based milks. Alternative meat accounts for under 1% of total meat category sales, while plant-based milks have grown to almost 15% of total milk sales as being added to the dairy case makes it more easily discoverable for shoppers. Improved taste, broader availability and the comingling of plant-based alternatives in grocers' refrigerated meat sections should help propel a similar surge in consumer adoption and sales growth.

Decreasing the price gap to conventional meat products will be another significant catalyst to drive regular consumption of faux-meats, and is a major focus for Beyond Meat and Impossible Foods.

## Why Consumers Prefer Plant Over Animal Protein



Source: Food Insight, Statista

## Scale Unlocks the Alternative's Potential

Both raw-material and manufactured product supply is improving, supporting the sales of plant-based alternative meat. Scale is key because higher production volumes will help lower costs, which in turn will help shrink the price gap with conventional proteins and aid long-term adoption. Major players in the global plant-based protein market -- including Archer Daniels Midland, Cargill, Roquette, Ingredion, Glanbia and Kerry Group -- have expanded their plant-protein capabilities in recent years.

Both Beyond Meat and Impossible Foods continue to invest to ensure sufficient production capacity both internally and with co-packers, as well as in product innovation. Kellogg and Conagra have also added additional production capacity to support their alternative-meat brands.

## Bloomberg Transcript

"Specific investments and activities include: the establishment of more localized production with closer proximity to our highest priority markets; more integrated end-to-end production processes across a greater proportion of our manufacturing network; scale-driven efficiencies in procurement and fixed-cost absorption; further diversification of our core protein ingredient supply chain; continued improvements in throughput across our manufacturing network; certain product and process innovations and reformulations; and packaging optimization."

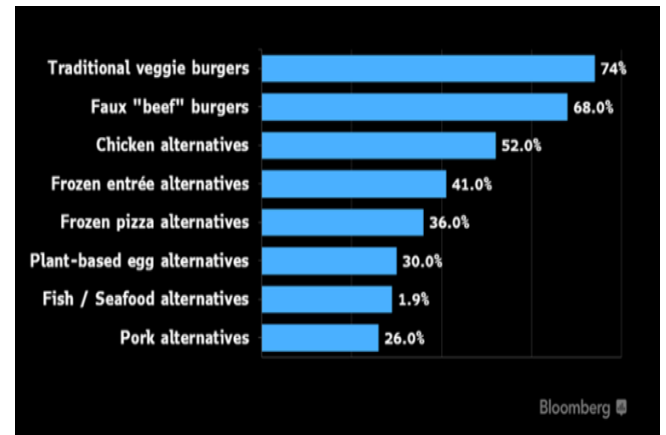
Source: Ethan Brown – CEO, Beyond Meat. 1Q21 Earnings Call, 5/6/21

## Flexitarian Is a Good F-Word

Growth in plant-based alternative-meat products will largely stem from shoppers looking to occasionally swap out meat proteins with something perceived to be healthier. Flexitarians, people who eat a primarily vegetarian diet but occasionally eat meat or fish, constitute as much as a third of the U.S. population and are a key demographic for plant-based alternative-meat products, according to the Good Food Institute. Households that favor meat alternatives tend to have children, skew to college educated and have incomes over \$50,000.

About 5% of the global population identifies as vegan. Alternative products such as burgers, sausage and nuggets are more targeted as options for meat eaters.

## Alternatives Consumers Tried in 2020



Source: Cadent Consulting Group

# Maturing Plant-Based Dairy Could Hit \$62 Billion in Sales

The alternative-dairy market is more mature but has room to grow, with the global potential to reach \$62 billion, up from \$23 billion in 2020, based on our analysis. Pockets of growth include oat milk, ice cream, cheese and butter alternatives. Danone, Hebei Yangyuan and Blue Diamond dominate global market share, though younger brands like Oatly aim to disrupt.

## Health and Sustainability Drive Alternative-Dairy Sales

The global plant-based dairy market may grow to \$62 billion by 2030, based on our scenario analysis, and reach 10% penetration of the total dairy market, up from 4.5% in 2020. Growth is aided by new formulations and products -- including alternative ice cream, cheese, sour cream and butter products -- as well as growing consumer focus on health and sustainability. Nearly 75% of the global population is lactose intolerant, which forms a sustained driver for alternative-milk and other dairy products.

Should the pace of these drivers be stronger than expected, plant-based dairy retail sales could reach \$81 billion in 2030. A slower uptake, limited by less adoption or limited appeal of new products, could result in a \$50 billion market size.

## Plant-Based Dairy Market Size Scenario, \$ bln

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Faster Growth</b>	\$22.9	\$28.4	\$31.7	\$35.5	\$39.0	\$45.4	\$52.1	\$59.0	\$66.1	\$73.5	\$81.0
% Penetration of Total Market	4.5%	5.5%	6.0%	6.5%	7.0%	8.0%	9.0%	10.0%	11.0%	12.0%	13.0%
<b>Base Case</b>	\$22.9	\$25.8	\$29.1	\$32.6	\$36.2	\$39.8	\$46.3	\$50.2	\$54.1	\$58.2	\$62.3
% Penetration of Total Market	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	8.0%	8.5%	9.0%	9.5%	10.0%
<b>Slower Growth</b>	\$22.9	\$24.8	\$26.5	\$28.8	\$30.6	\$32.9	\$34.7	\$37.2	\$39.1	\$42.9	\$49.9
% Penetration of Total Market	4.5%	4.8%	5.0%	5.3%	5.5%	5.8%	6.0%	6.3%	6.5%	7.0%	8.0%

Source: Bloomberg Intelligence, OECD FAO Agricultural Outlook 2021-2030, GFI 2020 State of the Industry Report

## New Entrants Aim to Snag Market Share

Alternative milk is by far the largest component of the plant-based dairy market, accounting for about 75% of sales. This is a much more mature category after the rapid adoption following the inclusion of Danone's Silk soy milk in the refrigerated milk case in 1999. The largest players in the alternative-milk category include Danone, Hebei Yangyuan, Blue Diamond, Coconut Palm Group and Vitasoy. These companies have broad distribution networks that make products easily accessible to consumers. New formulations, such as oat milk -- which claims greater sustainability benefits and a neutral taste -- are driving growth for companies such as Oatly.

Innovation in other dairy categories, including ice cream, cheese and butter, are also aiding sales, offering shoppers perceived health benefits.

## Top 5 Company Dollar Share, Milk Alternatives

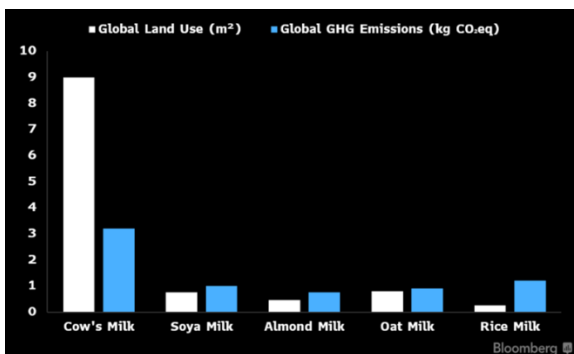
	2016	2017	2018	2019	2020
<b>Global Share</b>					
Danone	-	10.2%	10.3%	10.4%	11.3%
Hebei Yangyuan	14.9%	11.7%	11.4%	10.1%	8.6%
Blue Diamond	3.7%	4.2%	4.4%	4.7%	5.5%
Coconut Palm Group	4.7%	4.6%	4.6%	4.6%	4.4%
Vitasoy Int'l	2.9%	3.2%	3.2%	3.2%	3.1%
<b>North America Share</b>					
Danone	-	34.2%	32.4%	31.4%	30.1%
Blue Diamond	20.8%	22.7%	24.0%	24.7%	26.0%
Califfa Farms	2.6%	3.0%	3.1%	3.3%	3.6%
Earth's Own	3.3%	3.3%	3.1%	3.1%	2.9%
Ripple Foods	0.1%	0.6%	1.4%	1.7%	2.0%

Source: Euromonitor Passport

## Sustainability Claims Vary Widely

Sustainability is a driver for plant-based milk growth and has less environmental impact than cow-milk production in terms of land and water use and greenhouse gas emissions. However, the sustainability profile of plant-based milks varies widely, particularly for water usage. Cow's milk requires 628 liters of water to produce one liter of milk. In comparison, almond milk uses 371 liters and rice 270 liters vs. oat (48 liters) and soy (28 liters), according to a study published in Science in 2018.

## Environmental Impact of Milk Types per Liter



Source: Poore, J. & T. Nemecek. Science volume 360 p. 987-992

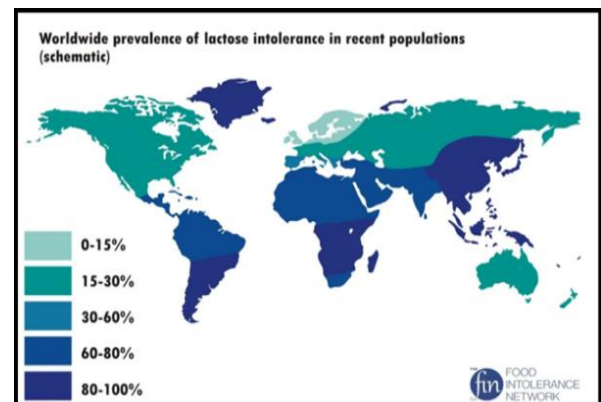
The Food and Agriculture Organization has indicated that livestock are responsible for about 14.5% of all anthropogenic greenhouse gas emissions, with cattle producing 65% of livestock emissions and beef and dairy cattle generating roughly equal amounts.

## Lactose Intolerance, Health Drive Demand

Up to 75% of the global population is lactose intolerant, making it difficult for many to properly digest bovine milk. This has helped drive adoption of both lactose-free as well as plant-based milk alternatives. Lactose maldigestion happens when the body stops producing enough lactase to digest milk as children. Lactose intolerance affects Asian, Black and Native populations to a greater extent than Hispanics and Caucasians, which is reflected by significantly higher global alternative sales coming from Asia than North America.

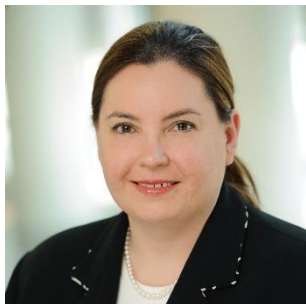
Plant-based dairy items often carry the perception of being a healthier option than conventional products, which is also driving consumer interest and demand.

## Global Prevalence of Lactose Intolerance



Source: Food Intolerance Network

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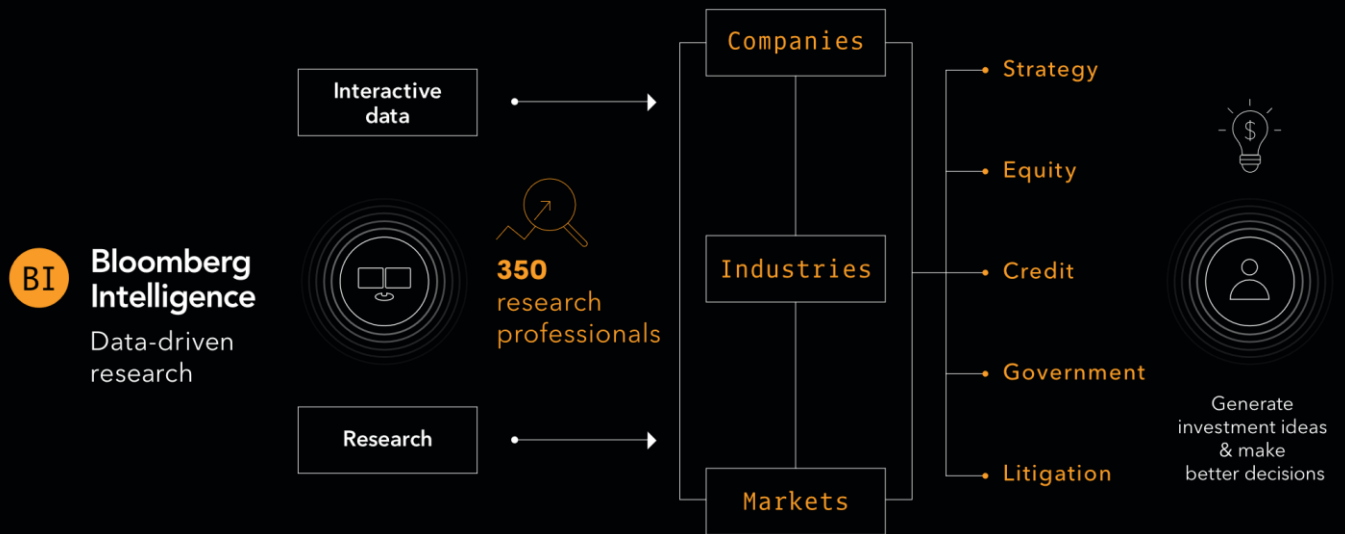
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