Plant-Based Meat in US Foodservice

Market trends, Covid-19, and how plant-based can help rebuild the restaurant industry

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Agenda

- NPD market data overview: Plant-based meat in US foodservice
- Effects of Covid-19 on plant-based and foodservice industries
- GFI’s outlook: How plant-based can help rebuild foodservice

How GFI advances alternative proteins

GFI is a nonprofit working to create a sustainable, healthy, and just food system through three key areas of work:

Science and Technology

Bridging gaps in scientific research, funding, and talent across the alternative protein sector.

Corporate Engagement

Helping the food industry and investor communities put delicious, affordable alternative proteins on every menu and in every food retailer.

Policy

Advancing government investment in sustainable proteins as well as fair regulation and legislation.

GFI officially earned GuideStar's 2019 Platinum Seal of Transparency - obtained by less than 1% of nonprofits - reflecting our commitment to maximum impact, efficiency, and inclusion.

We work as a force multiplier, bringing the expertise of our departments to the rest of the world.

United States
Brazil
India
Europe
Asia Pacific
Israel

100+ staff in 6 countries

How will we feed a global population of 10 billion by the year 2050?

Sustainably

Industrialized animal agriculture is in the top **2-3 most significant contributors** to the world's most pressing environmental issues such as water use, climate change, and land use.

Industrialized animal ag is responsible for **14-18% of greenhouse gas emissions—**a higher share than transport.

Source: United Nations, Livestock's Long Shadow (report)

Efficiently

It takes **nine calories of food fed to a chicken** to get **one calorie** back out in the form of animal meat.

Even though **75% of agricultural land** is used for raising and feeding livestock, livestock only provides **1/3** of the global protein supply.

Sources: World Resources Institute (calorie formula); UN FAO (land use)

Safely

Animals in the United States **consume more than 2x** as many medically important antibiotics as humans do.

Medical experts expect **10 million annual deaths from antimicrobial resistance (AMR) in 2050**, compared to 700k annual deaths estimated currently.

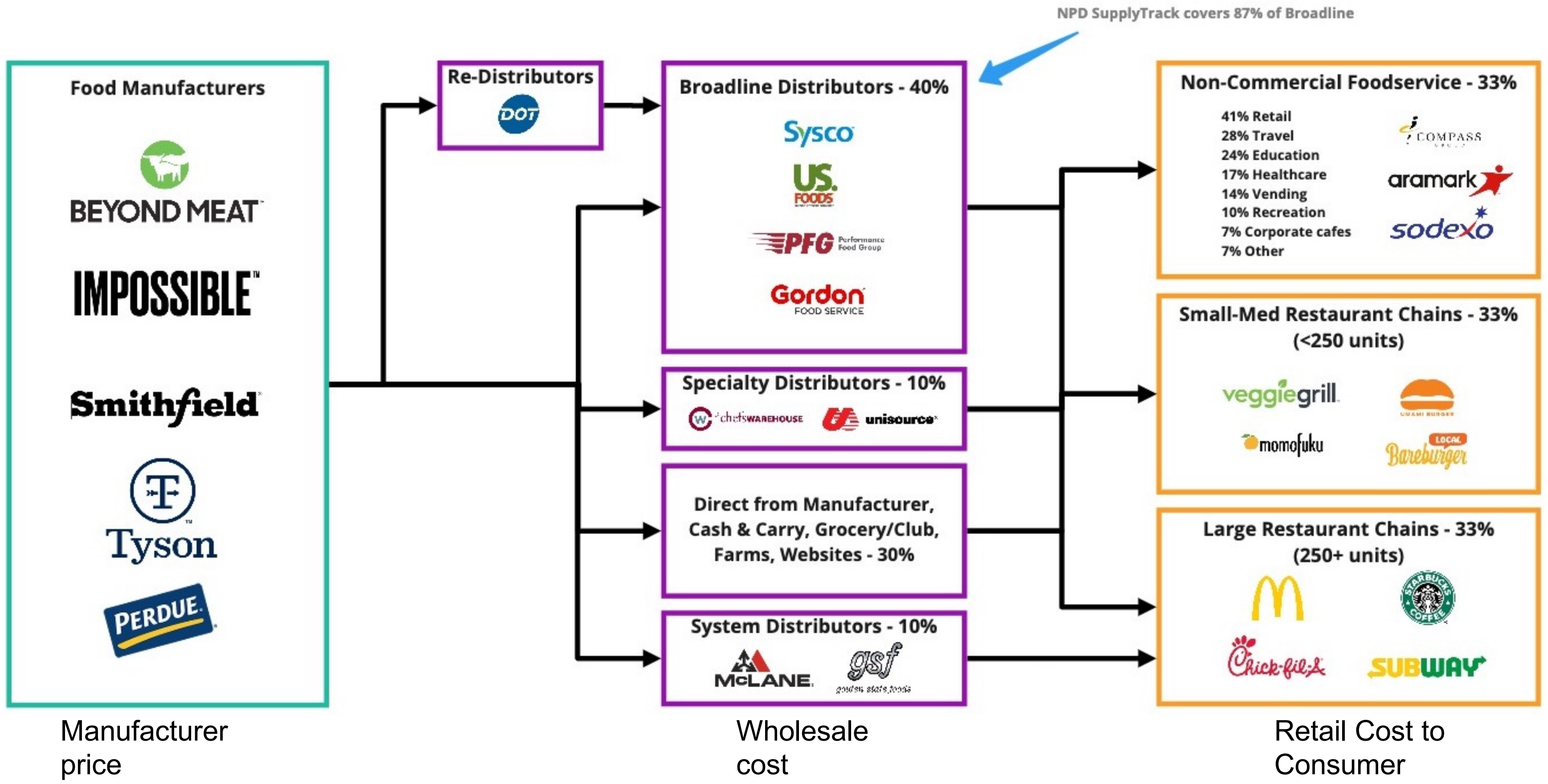
Sources: FDA (animal-consumed antibiotics); IMS Health (human-consumed antibiotics); United Nations IAGC (AMR)

NPD market data overview: Plant-based meat in US Foodservice

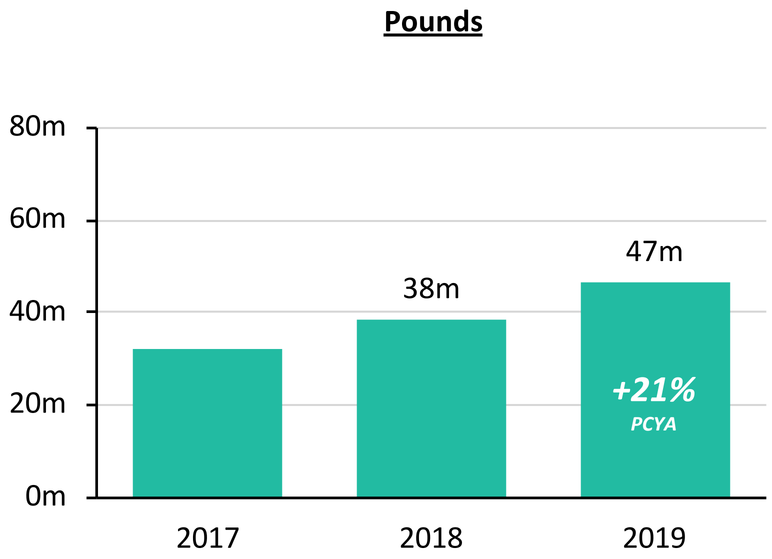
Methodology & limitations

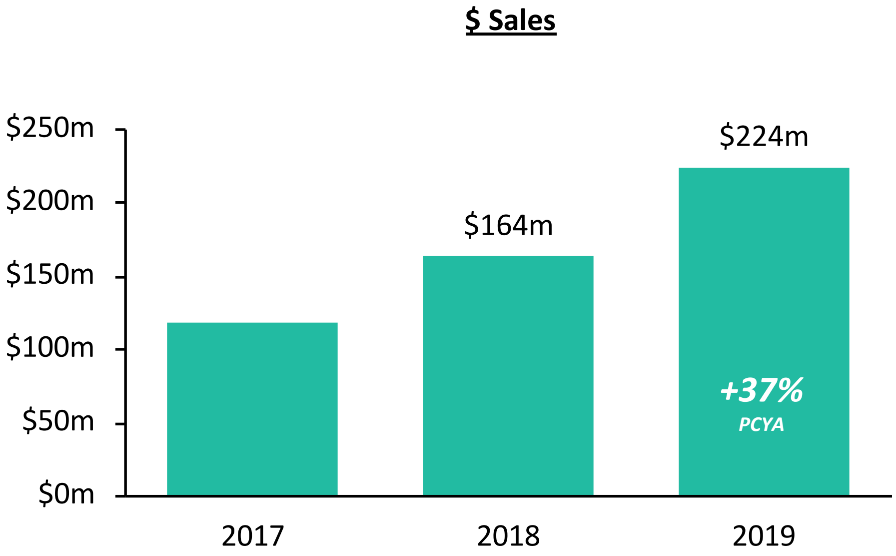
- Most of the NPD data were collected for the year ending December 2019. Some of the later slides with more advanced modeling are from the year ended May 2019. Each slide is labeled with the data time period. **NPD data predates Covid-19.**
- NPD SupplyTrack measures **wholesale pricing** (what distributors sell to foodservice operators, not **end user pricing** (what foodservice operators charge consumers).
- NPD SupplyTrack data is syndicated from most major broadline foodservice distributors like Sysco, US Foods, Performance Food Group, etc. Broadline is approximately 40% of foodservice sales volume, and NPD covers 87% of the broadline universe. **NPD's data covers approximately 34.8% of total foodservice distribution sales in the US**.
- Broadline distribution is significantly skewed towards medium- and small-sized restaurant chains (<250 units) & non-commercial foodservice operators (college and corporate cafeterias, healthcare, K-12, etc.). The plant-based category is still small and rapidly evolving, which can create distortions in analysis.
- These data are just for the US, and only cover plant-based meat, not plant-based egg or dairy.

US foodservice and what NPD SupplyTrack data covers



Plant-based meat grew dollar sales by 37%, year over year, making it one of the fastest growing categories in broadline





Note: excludes commercial Large Chains (250+ units)
Source: The NPD Group/SupplyTrack®, 12ME Dec 2019

New products and forms are entering the market with increased innovation anticipated

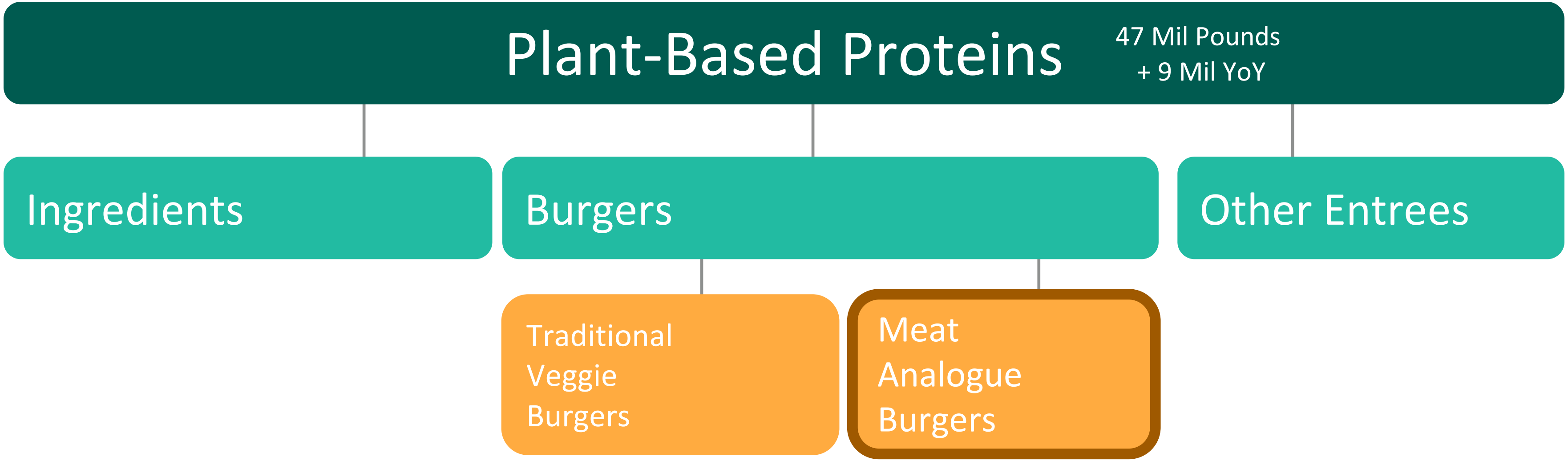
Fastest growing formats
(Plant-Based Pound Sales Growth vs. YA)

1. Italian Sausage
2. Sausage - Brat
3. Filet
4. Meatballs

But burgers are still dominant with almost half of the volume and over half of the growth

Note: excludes commercial Large Chains (250+ units)
Source: The NPD Group/SupplyTrack®, 12ME Dec 2019

Meat analogue burgers are less than 20% of plant-based proteins, but drove over half of the growth



Black bean burgers, Mushroom burgers, Quinoa burgers

Have aesthetic qualities or chemical characteristics of animal meat

Note: Incremental Pounds vs Year Ago; excludes commercial Large Chains (250+ units)
Source: The NPD Group/SupplyTrack®, 12ME Dec 2019

Commercial restaurants represent 72% of meat analogue volume and 68% of growth

Independents	Micro Chains	Small Chains	Medium Chains	Non-Commercial
1-2 Locations	3-19 Locations	20-99 Locations	100-249 Locations	
1st	3rd	2nd	4th	28%

% of Pounds

Note: excludes commercial Large Chains (250+ units)

Source: The NPD Group/SupplyTrack®, 12ME Dec 2019

Operator segments that are strong for beef burgers are the strongest for meat analogue burgers

33% Casual Dining Bar & Grill

15% Quick Service Burger

5% Midscale Family Style

% of Pounds

Note: excludes commercial Large Chains (250+ units)

Source: The NPD Group/SupplyTrack®, 12ME Dec 2019

Top entrées among veggie burger buyers

Consumers that ordered plant-based burgers at restaurants are also ordering beef burgers and chicken during their other restaurant visits

Veggie burger buyers – other restaurant purchases include (top entrees purchased)

1. Beef Burgers
2. Chicken Nuggets / Strips
3. Tacos / Burritos
4. Chicken Sandwiches
5. Pizza
6. Veggie / Plant-Based Burgers

Source: The NPD Group / Checkout Year Ending May' 19

Manufacturers are focusing on the larger omnivore and flexitarian segments

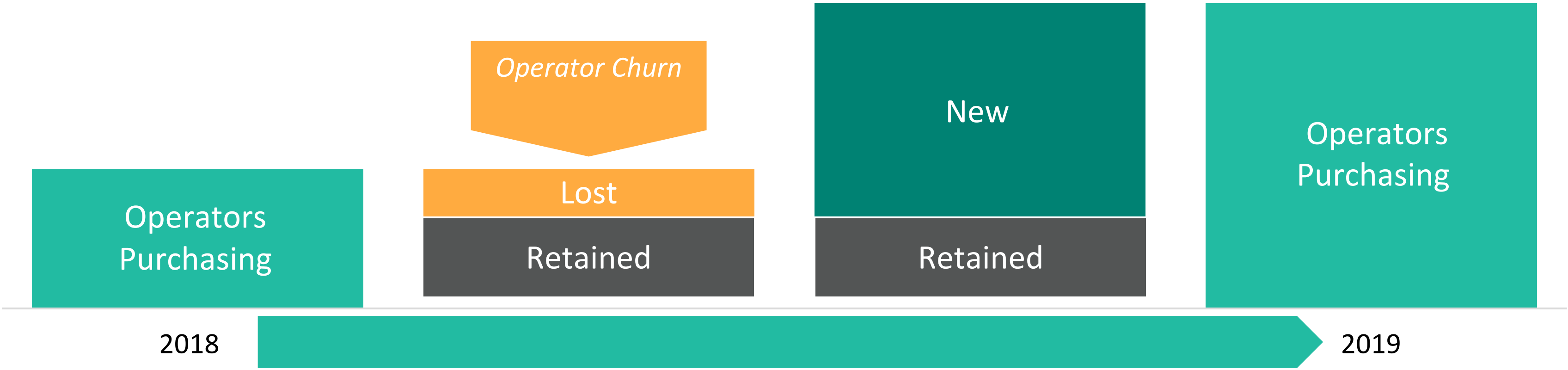
Source: Mattson

Understand the impact of new operators joining the plant-based burger category

- Over 11k commercial operators started purchasing meat analog burgers in the last year
- Over 2.5K stopped purchasing, showing that this item is not a fit for all operators and going forward continued operator churn is expected
- Price and velocity are significantly stronger for meat analog burgers compared to traditional veggie burgers

Meat analogue burgers lost over a third of its 2018 operators with price, availability, and consumer adoption playing a role

Purchase Dynamics: Commercial Operators Purchasing Meat Analogue Burgers



Operators ordering meat analogue burgers are spending and purchasing significantly more per order than those ordering traditional veggie burgers

Note: excludes commercial Large Chains (250+ units)
Source: The NPD Group/SupplyTrack®, 12ME May 2019

Analytic Scope: Meat Analogue Source of Volume

- Target Item: Meat Analogue Burgers
- Shifting Universe: Casual Proteins
    - Chicken (As is & Value Add)
    - Ground Beef (Patties & Bulk)
    - Turkey (Excl. Deli)
    - Fish (Finfish, Flatfish, Freshwater & Ground)
    - Portobello Mushrooms (Fresh and Frozen)
    - Other Plant-Based Proteins
- Time Periods: Year Ending May '19 vs '18
- Channels: Commercial Excluding Large Chain

Analysis Note:
Operator shifts to plant-based proteins are likely impacting categories beyond this established competitive set. This analysis was designed to quantify the impact to "casual proteins" and will not address shifting beyond these categories.

Source: NPD

Source of Volume Methodology

Source of volume looks among operators purchasing meat analogue burgers and isolates the impact of three effects:

1. **Category New/Lost Buyers**: Operators opening, closing or entering the casual protein category

2. **Product Shifting:** Current casual protein operators shifting their purchase volume to other products in the competitive set

3. **Category Buying Rate:** Operators buying more or less in the casual protein category overall

Source: NPD

What proteins are operators moving away from when they purchase meat analogue burgers?

- Meat analogue gains are driven mostly by operators shifting purchase volume away from other proteins and towards meat analogue burgers
- All types of casual proteins are losing out to meat analogue burgers, including beef, chicken, turkey, and fish
- Other plant-based products are highly competitive with meat analogue burgers and increased shifting is expected as these categories grow

Source: NPD

Source of Volume

1. According to NPD, plant-based burgers are displacing multiple types of proteins: chicken, beef, fish, turkey, & other plant-based proteins

2. GFI's hypothesis: diners who reduced their beef consumption due to health or environmental concerns see plant-based beef as a guilt-free way to enjoy a beef experience

3. Implications: Plant-based burgers can help operators with beef-centric menus attract diners and occasions they have lost to chicken and other categories

Note: Commercial Excluding Large Chains (250+ units)

Source: The NPD Group/SupplyTrack Year Ending May '19 vs '18 (Items that made up at least .2% of pounds)

GFI estimates: Total plant-based meat market in foodservice

NPD SupplyTrack extrapolation to total foodservice market

- Total 2019 foodservice plant-based meat wholesale sales: $224 million
- Wholesale to end-user revenues use 3x (conservative) to 5x (liberal) multiplier
- Expand to rest of market – 34.8% to 100%
    - If the rest of the market has equal plant-based penetration as broadline: 2.87x multiplier
    - If the rest of the market has more plant-based penetration than broadline: >3 multiplier
    - If the rest of the market has less plant-based penetration than broadline: <2.5x multiplier
- Using conservative multipliers (3x and 2x, respectively) yields total foodservice sales of **~$1.34 billion**
- By comparison, SPINS 2020 retail data show US retail sales of plant-based meat at $939 million, which would make the total US market for plant-based meat **$2.2 billion**

US plant-based foodservice sales

Plant-based burgers have 3.4% market share in US QSR

"Plant based" grew 328% on menus in the last year

Group purchasing organization with 16,000 restaurant members

Meat alternative sales grew 268% 2018-19

Sources: Datassential, 2019; NPD, 2019, Restaurant Dive, 2019

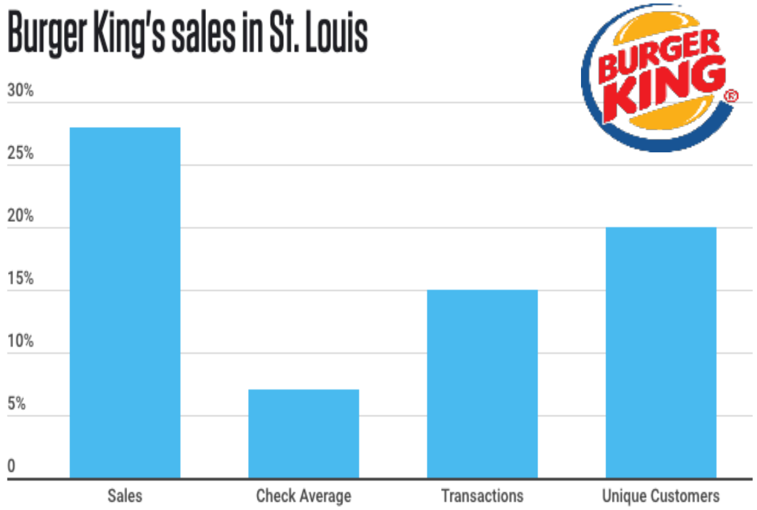
Burger King late 2019 results

According to Cowen, checks with the Impossible Whopper tend to be $10 or more, compared to the average Burger King order of $7.36 in 2018

BK's third quarter earning report revealed the Impossible whopper drove 5% of BK's comparable sales growth in the U.S.

Average daily orders of Impossible Whoppers at Burger King locations owned by Carrols Restaurant Group (Largest BK franchisor) have stabilized at 28

- An average Burger King restaurant owned by Carrols sells 234 beef Whoppers a day
- 10% of all whoppers sold are Impossible



Source: Business Insider, 2019; RBI, 2019; Seeking Alpha, 2020; Technomic, 2019

Dunkin' Beyond Meat sandwich

- Dunkin' introduced the Beyond Sausage Sandwich nationwide in November 2019
- Same-store sales rose 2.8% in the fourth quarter—the highest level in 6 years
- The Beyond sandwich brought in new customers
- The sandwich increased average check size—orders featuring the product averaged more than $9

Source: Restaurant Business Online, 2020

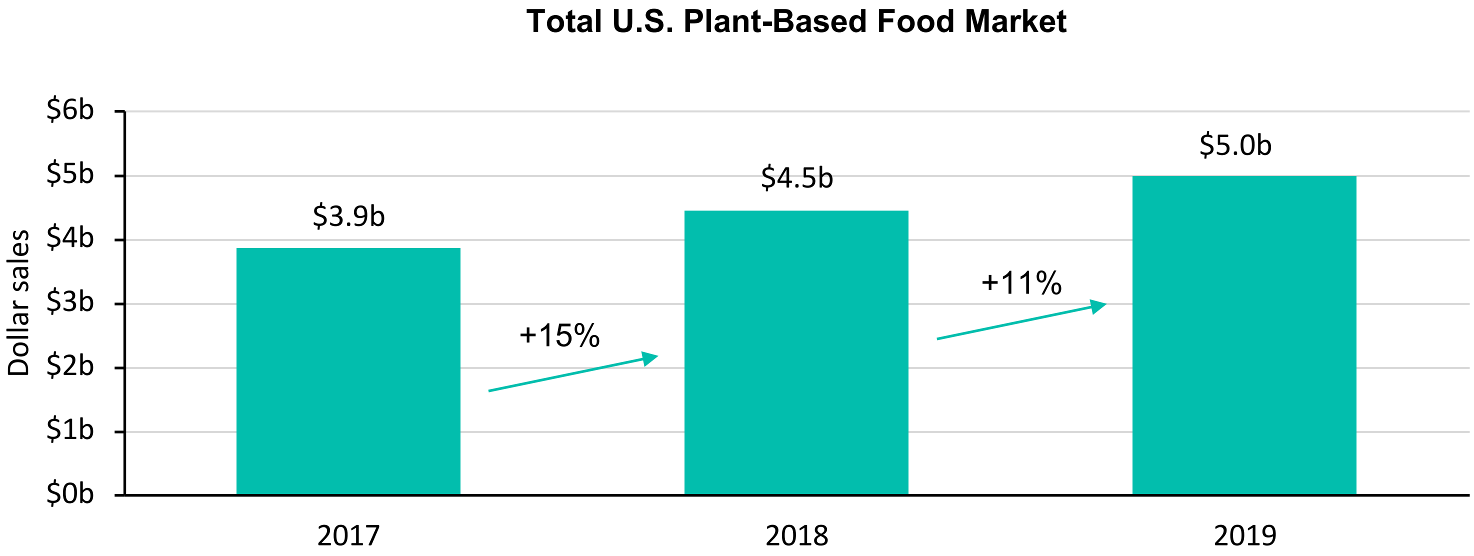
Gregory’s Coffee (30 units, coffee chain)

- Just Egg is the #1 breakfast item chain-wide
- It's taking 40% of all breakfast sandwich sales, outselling animal egg options
- JUST Egg sales didn’t cannibalize other items
- Average check size increased
- JUST Egg customers have also proven loyal – while sales of other items fluctuate based on traffic, JUST Egg sales are consistent and growing

"I certainly expect that over time that you will see plant-based on the McDonald's menu, I think for us, the question is really about when."

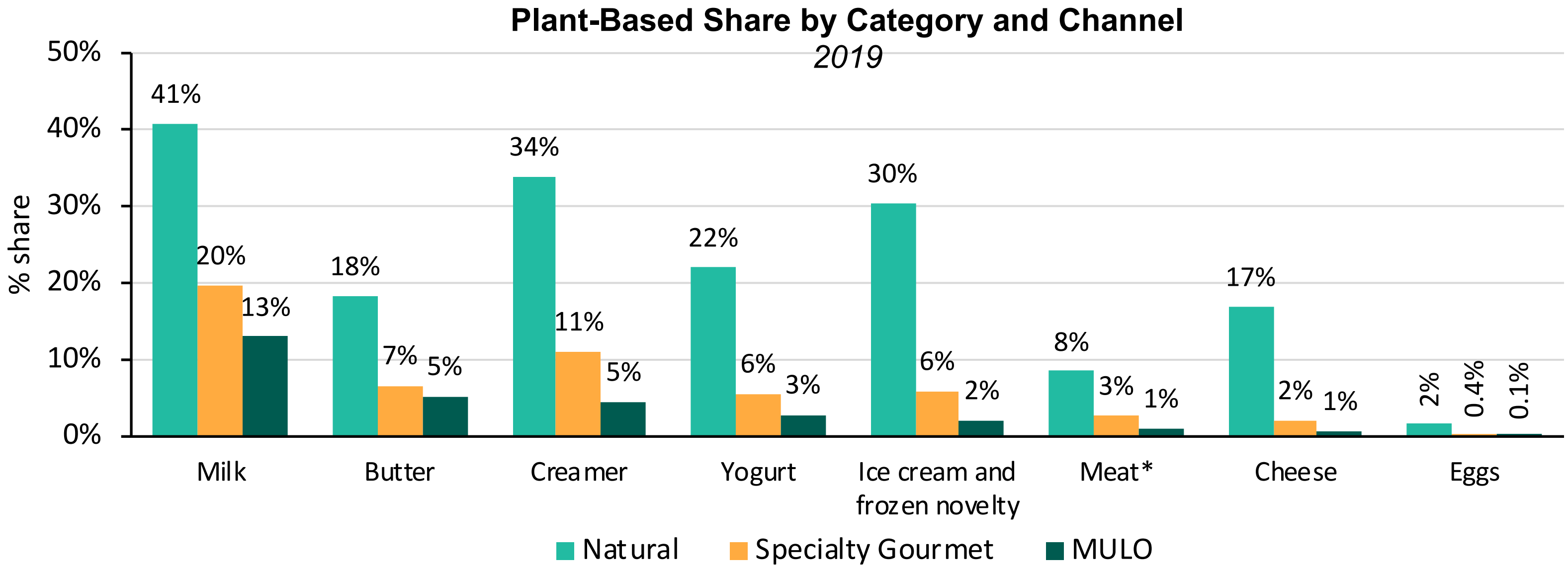
Chris Kempczinski, McDonald's CEO

Retail plant-based grew 5x faster than total food sales in 2019



Source: SPINSscan Natural and Specialty Gourmet (proprietary), SPINSscan Conventional Multi Outlet (powered by IRI), 104 weeks ending 12-29-2019

Retail: Plant based is doing well where trends start



*Note: SPINS does not report non-UPC meat counter sales. To account for this, the plant-based meat total retail share calculation uses the $95 billion total meat market size reported by Nielsen, as this number includes both retail packaged meat sales and non-UPC meat counter sales

Source: SPINSscan Natural and Specialty Gourmet (proprietary), SPINSscan Conventional Multi Outlet (powered by IRI), 52 weeks ending 12-29-2019; Nielsen (2019), *The F Word: Flexitarian Is Not a Curse to the Meat Industry*

Plant-based meat has a 60% repeat rate, up from year ago

Repeat rate

% 2+ Time Buyers

57.2%
(year ago)

60.1%

Buy rate

$ Per HH Purchase

$41.80
(year ago)

$43.50

Source: Nielsen Household panel, total plant-based meat (custom defined), 52 weeks 8/11/18

Covid-19 effects

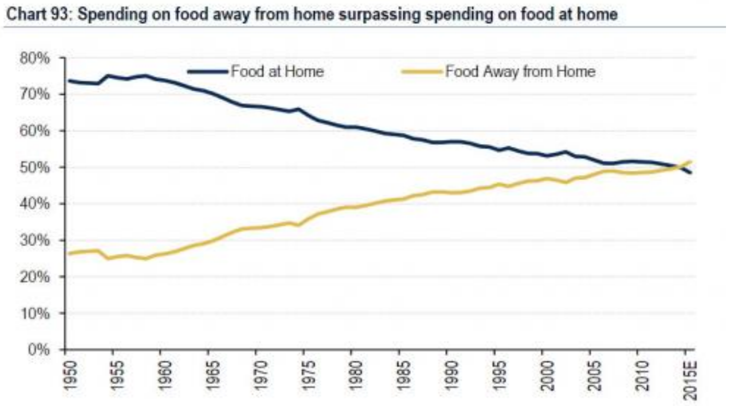
Retail vs. foodservice

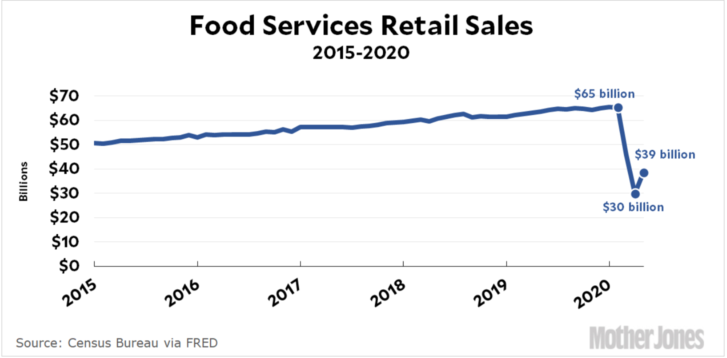
Foodservice (Away From Home)

- 54% of food expenditures
- More money spent
- Often where trends start and gain traction
- Higher markups, which makes it easier for premium products to be profitable
- PR value and signaling power are high

Retail (At Home)

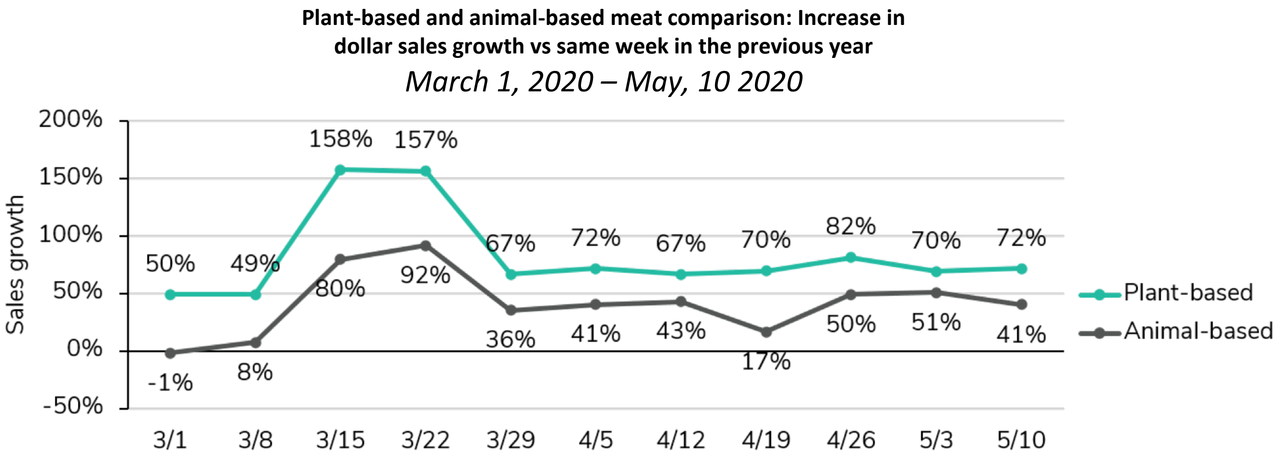
- 46% of food expenditures
- More mass (volume) of food due to lower markups
- Higher GFI mission importance





Sources: Mother Jones, 2020; USDA ERS, 2019

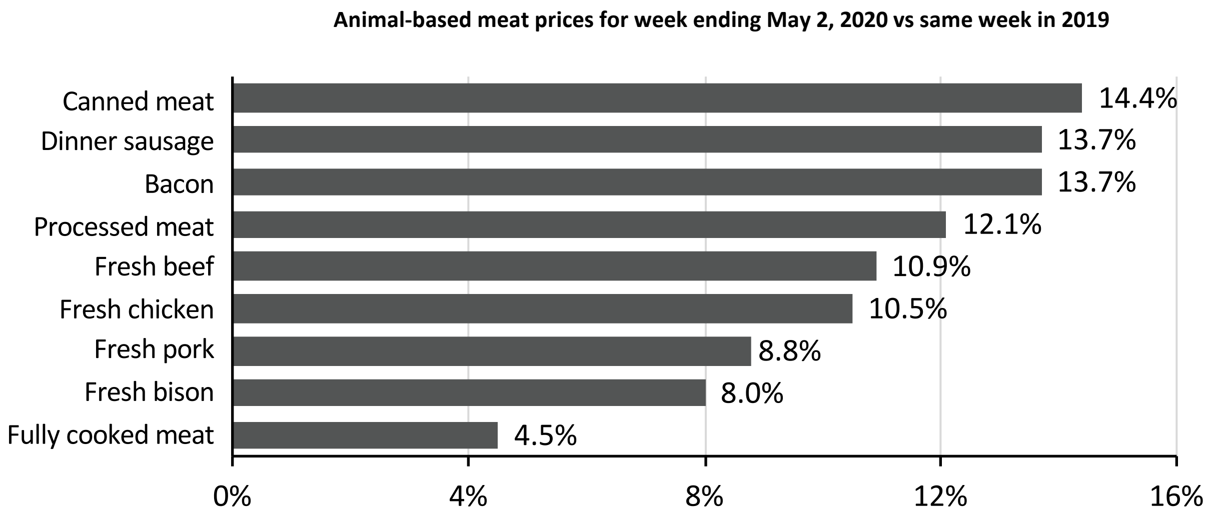
Amid Covid-19, plant-meat dollar sales growth has consistently outperformed animal-based meat dollar sales growth in retail



The animal-based and plant-based meat categories grew 45% and 86%, respectively, for the 9-week period ending May 10

Source: Meatingplace – The Analogue Dish, "Sales up, yes, but market share down for alt-meat in retail surge" (May 2020) - 210 Analytics LLC using IRI data

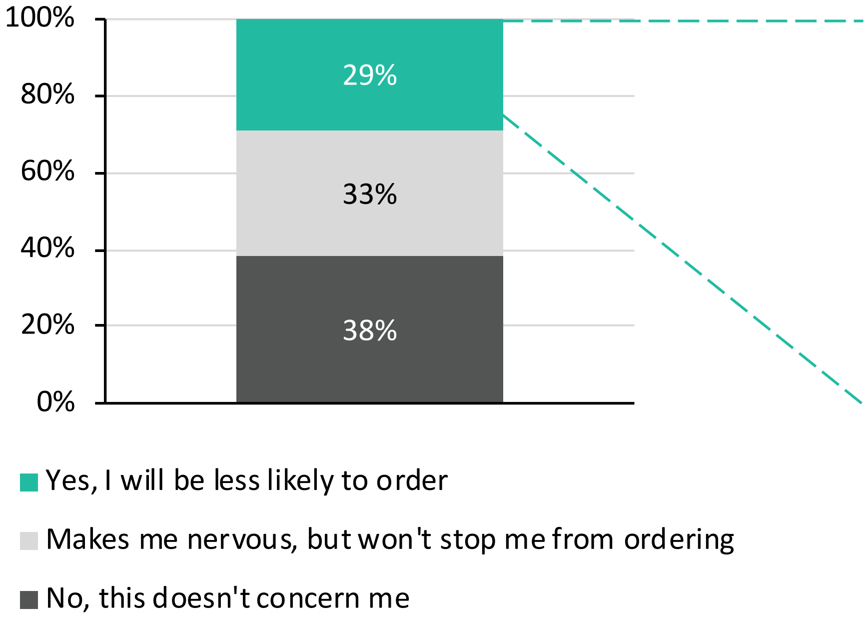
Meat processing plant closures & demand shifts have led to increased animal-based meat prices



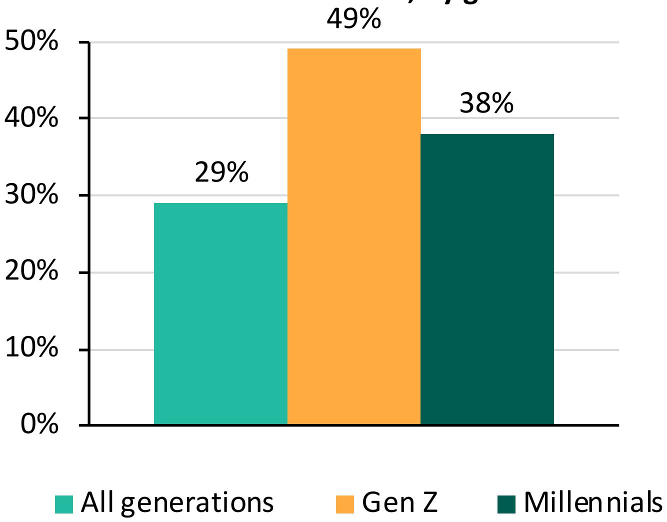
Source: The Counter, "Why Covid-19 plant shutdowns could make the Big Four meatpackers even more profitable" (May 2020)

Gen Z and Millennials are more likely to report they will not order animal-based meat due to Covid-19

Consumer responses to whether or not Covid-19 makes them feel less safe about ordering meat dishes

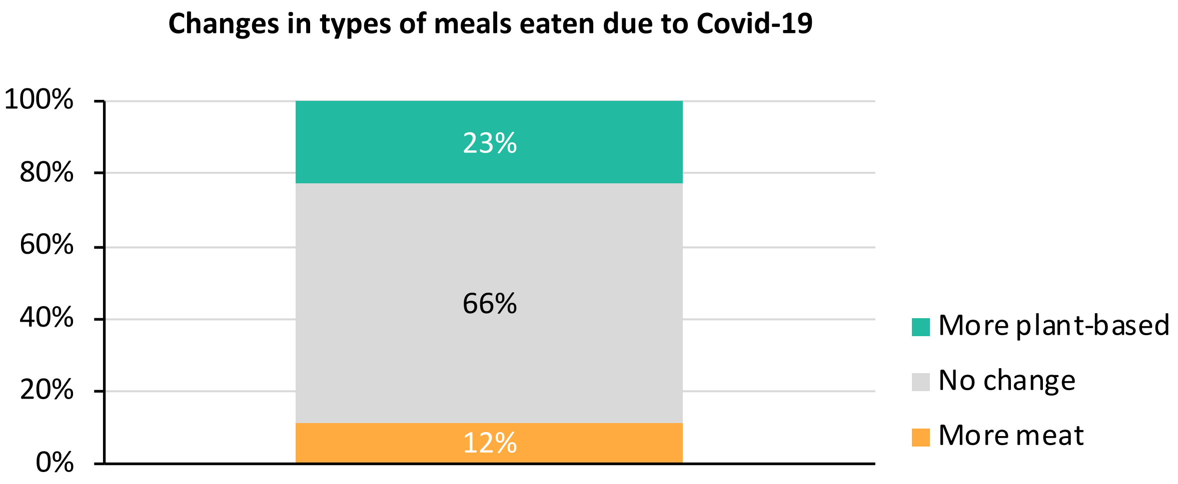


Consumers who report they are less likely to order meat dishes, by generation



Source: Datassential, "Covid-19 Report 18: Where's the Meat" (May 2020)

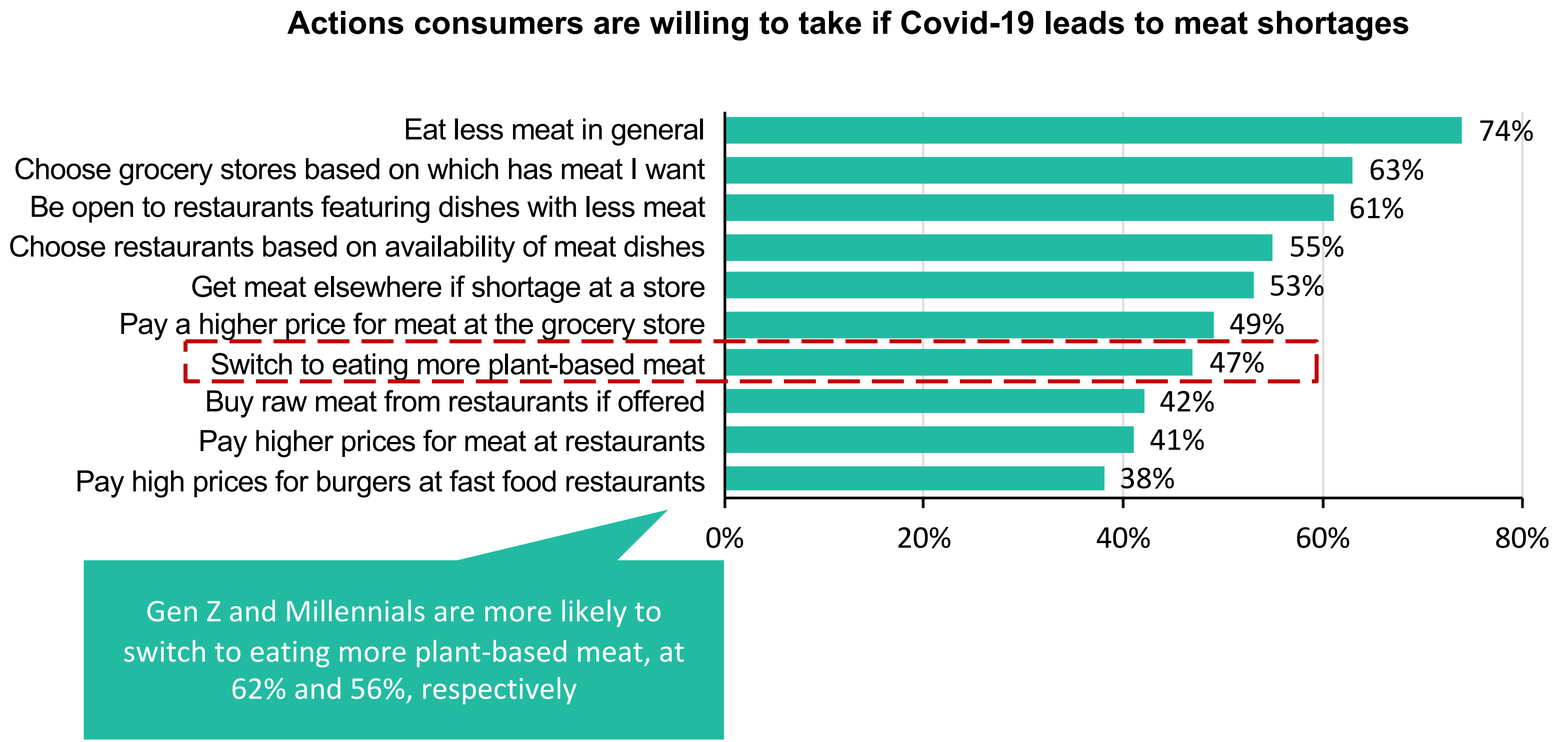
Almost one quarter of consumers report eating more plant-based meals due to Covid-19



Consumers aged 18-24 are the largest age group to eat more plant-based meals during the pandemic (29% vs 23%)

Source: Self, "Personal Spending Habits During Covid-19" (May 2020)

Almost half of consumers report they are willing to eat more plant-based meat in the event of meat shortages



Source: Datassential, "Covid-19 Report 18: Where's the Meat" (May 2020)

Plant-based companies raised $741 million in investment capital in Q1 2020, nearly matching the $747 million raised in 2019

Investments in plant-based companies in 2020 (non exhaustive)	
Company	**Amount raised**
rebellyous foods	$6 million
IMPOSSIBLE™	$500 million
plantible	$4.6 million
the LIVEKINDLY co.	$200 million

Source: The Good Food Institute, "New GFI State of the Industry Reports Show Alternative Proteins are Poised to Flourish Post-Covid-19" (May 2020)

After Covid-19 rebound, plant-based meat takes off in China

Changing consumer preferences and meat safety concerns fuel boom in demand for plant-based food in Asia

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Alternative protein SWOT analysis: Covid-19 & recession

STRENGTHS

+ Strong demand growth
+ Stable supply chain
+ Stronger shelf life
+ Competitor products face volatility
+ Animal protein supply chain has risks from zoonotic and animal diseases

WEAKNESSES

- Supply chain disruptions
- Premium priced products
- Investment dependency
- R&D interruptions
- Go-to-market strategies often relied on foodservice channel

OPPORTUNITIES

+ Government R&D & regulatory support
+ Food security, sovereignty, and local means of production have renewed importance
+ New distribution channels emerging
+ New technical talent availability
+ Investors and food industry double down
+ Infrastructure costs may go down
+ Some inputs and capacity may be cheaper

THREATS

- New business development is frozen
- Government funding may focus elsewhere
- Basic scientific research and consumer research is interrupted
- Technical talent may be in greater demand elsewhere
- Key suppliers may be diverted to medical or other applications

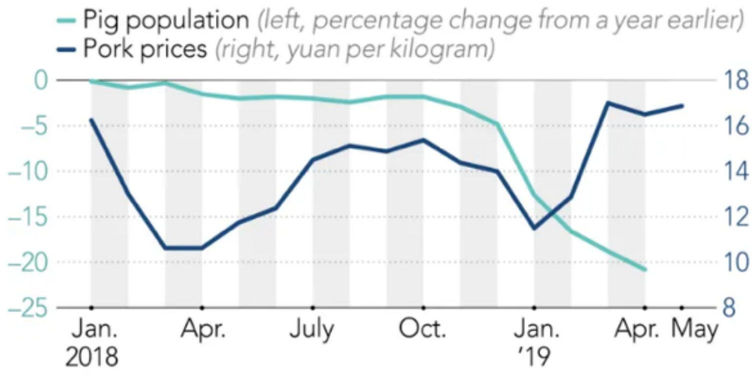
Alternative protein SWOT analysis: Covid-19 & recession

NEUTRAL/UNKNOWN EFFECTS

+ **Volatility, uncertainty, and chaos heightens other risks** such as African Swine Fever, avian flu, etc.
+ **Increased industry consolidations and M&A activity**
+ **Heightened consumer panic risks** - If COVID-19 is shown to be spread via foods like meat or food distributors like restaurants or grocery stores, that could create panic or cause massive shifts away from certain food categories or channels
+ **Urbanization and globalization challenged** - COVID-19 may slow or even slightly reverse global urbanization and some elements of globalization including international supply chains and exports/imports
+ **Higher unemployment and shifts in labor** - Unemployment will rise, which could cause labor costs to go down for animal agriculture and alternative proteins
+ **Increased industry consolidations** - The challenges winnow out weaker competitors, make M&A cheaper, and generally will contribute to industry consolidations.
+ **Changes in how food is prepared** - Most people don't have the same cooking equipment at home that restaurants have. Food products need to fit what consumers have at home.

Market disrupting events can have enormous financial impact

China's plunging pig population send pork prices soaring



Source: Ministry of Agriculture and Rural Affairs, National Bureau of Statistics

145 Reported outbreaks in China since Aug 2018

1.6M Or half, of China's breeding pigs died or were culled

80% Chinese hog farmers decided not to restock

-22% Fall in Chinese sow herd in April 2019

Focus for plant-based sales

- Target strategic, less-affected segments
  - Some noncommercial - Business & industry, healthcare, K-12, college & university
  - Grocery store foodservice
  - Pizza, QSR, etc.
  - Digital channels – plant-based performs well here due to younger audience
- Work from home trends will change commuter eating habits around breakfast and lunch
- The pandemic is shining a bright light on the risks and negatives of animal meat – slaughterhouse pictures in the news, worker safety and mistreatment, etc.
- **Plant-based sector needs to position itself as a growth driver that can help rebuild the restaurant industry**

The future of plant-based in US foodservice

How plant-based can help the foodservice industry rebuild

Culinary: Plant-based proteins offer a platform for creativity and innovation

- Reformulating existing dishes
- Creating new dishes
- Working with blended animal/plant proteins
- Working with entirely new kinds of foods
- Versatility: Add one plant-based item to your inventory, get 15 new dishes
  - Add plant-based beef, get: Burgers, breakfast sausage, burritos, soups, pizza toppings, tacos, lasagna, meatballs, bolognese sauce, dumplings, pasta and salad toppings, and much more.

Customers: Plant-based proteins help boost appeal

- Attracts new consumers
- Raises check averages
- Eliminates veto votes

Plant-based is a long-term paradigm shift

79% of millennials eat meat alternatives

30%
eat meat alternatives every day

50%
eat meat a few times per week

37%
plan to buy more meat alternatives next year

1. Repeat purchase rates are high
2. Diversity of motivators, products, and consumers
3. Plant-based has gained ground in multiple segments, including fast casual, QSR, burgers, Mexican chains, Asian concepts, and breakfast foods.
4. Plant-based has stayed on menus, gotten increased advertising investment, and we’ve even seen chains double down with additional plant-based items
5. Plant-based appeals to all generations, but demand is off the charts for Millennials & Gen Z
6. Food companies who are looking into the future need to be prepared for a tidal wave of plant-based demand

Source: Mintel

Plant-based ingredients meet everyone's needs

Operators won't stock both animal butter (appeals to 90% of population) AND plant-based butter (which appeals to 99% of population), so they'll just stock plant-based butter and reformulate dishes accordingly

Kosher is a good example

- Less than 2% of Americans are Jewish, and only a minority of Jews keep kosher
- More than 40% of packaged foods and beverages sold in the United States are kosher

GFI’s predictions for the future of plant based

Milk was the first breakout category, showing the power of adjacency

Burgers are the second wave, demonstrating the power of analogs

2020: The third wave will be ground products & dairy

- Pork & beef sausage alternatives
- Breakfast burritos, sandwiches, omelets, etc.
- Mexican foods
- Pizza toppings
- Pasta (ground beef and meatballs)
- Meatball subs
- Chicken nuggets & tenders
- Yogurt, milks, butter, etc.

Plant-based is moving beyond the burger format and occasion into a wide variety of segments, dayparts, and food categories

Plant-based products will continue to improve

1. Plant-based is still a young category. As production increases, efficiency will go up, product quality (nutrition, taste, texture, biodiversity, clean labels) will improve, and prices will come down
2. Protein diversity is increasing: Pea, pulse concentrates and high protein pulse flours, lupin, lentil, chickpea, fava, green pea, mung bean, lenteins, hemp, quinoa, oat, and seaweed
3. New forms of food-tech like recombinant proteins, fermentation, algae, fungi, and cellular agriculture show a lot of potential for creating ingredients and products with clean ingredient decks and improved nutritional and experiential functionalities
4. Animals are about as healthy (and tasty) as they're going to get, but alternative proteins are just getting started

Atlast mushroom bacon

Alternative protein growth flywheel

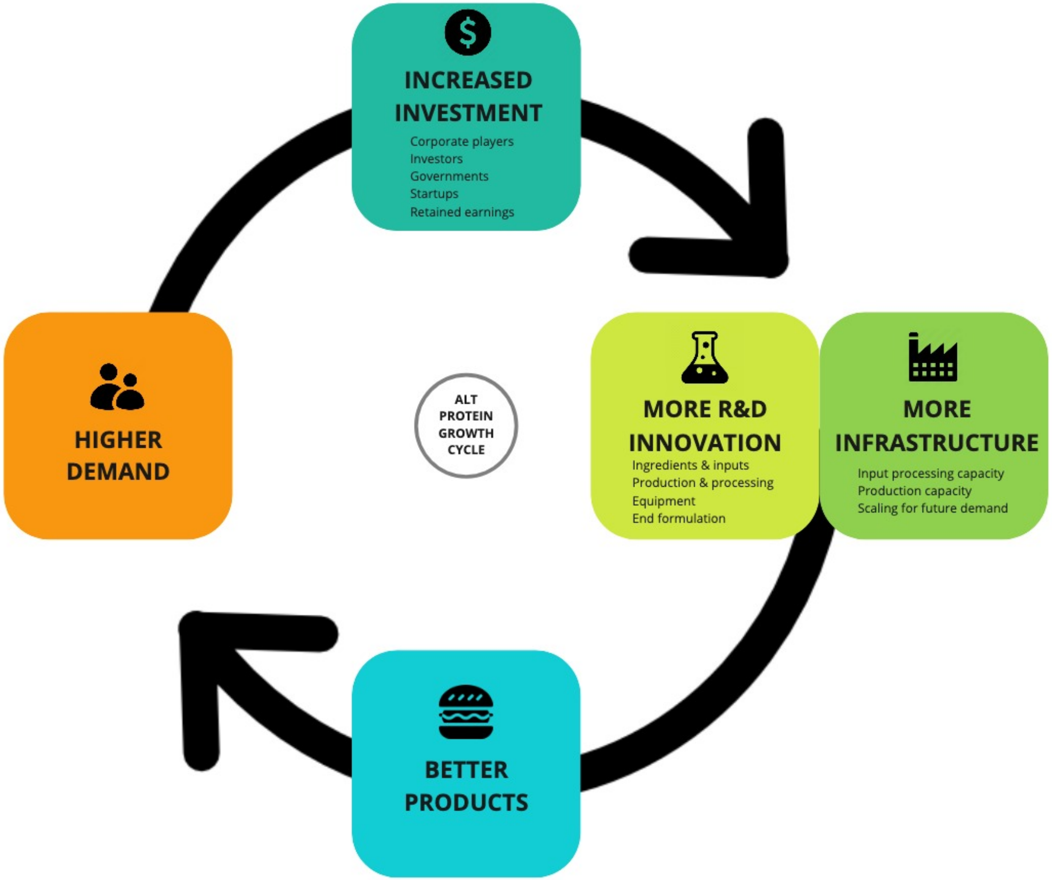
BETTER TASTE & FUNCTION - Texture, cooking, etc.

LOWER PRICES - Economical, profitable

MORE VARIETY - Meat, eggs, dairy, varietals

WIDER AVAILABILITY - Taste, texture, functionality

HEALTHIER & SAFER - Nutrition, fortification, safe



Plant-based 2.0 has reframed the meat and dairy categories

Meat has been abstracted away from the animal

- From hunting/gathering and agrarian economies >> centralized farming and slaughter
- From buying whole parts of animals (side of beef) >> buying specific cuts and formats
- All enabled by food-tech and supply chain technology innovations such as boxed beef, cold shipping

The definition of “meat” is shifting, from being primarily defined as animal tissue to:

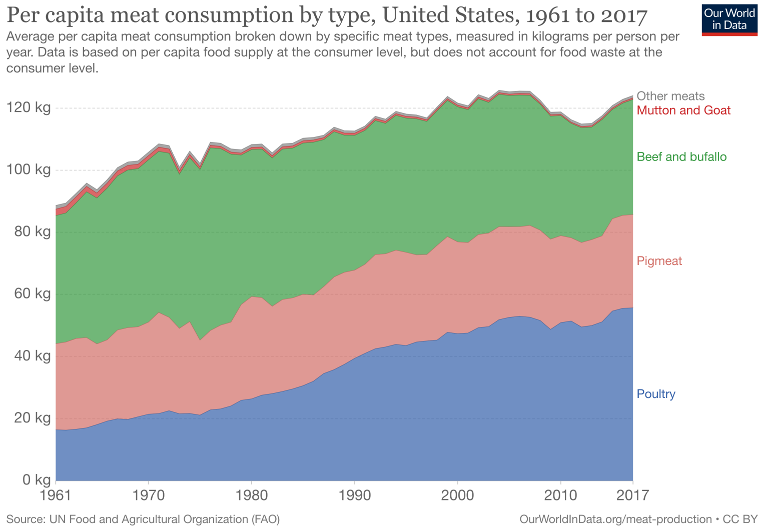
- Functional - center-of-plate anchor, satiety, nutrition and protein source, energy for my day
- Experiential - specific grouping of flavors and textures, satiety, nutrition, an experience

Integrating plants and new forms of protein is the next step of this evolution

- Plant-based, fungi, algae, cellular agriculture, precision fermentation, etc.
- Hybrids/blends of Animal + plant protein, animal + cellular protein, plant + cellular, etc.
- The species of meat we currently eat (cows, chickens, pigs, etc.) weren’t necessarily selected for being the most delicious or nutritious: these species happened to be easy to domesticate

Plant-based is the "fifth meat" and will soon surpass fish & seafood as the fourth-largest center-of-plate protein category

- Chicken has been the biggest growth story in meat for the past 50 years
- Plant-based has become the fifth major center-of-plate protein
- If the typical American were to eat 17 pounds of plant-based meat each year (just two 3-oz. servings per week) plant-based meat would replace seafood as the fourth-most-popular meat in the US.



Conclusion

Business resources

REPORT
State of the Industry Reports >>

REPORT
The Good Food Restaurant Scorecard >>

GUIDE
The Good Food Startup Manual >>

DATABASE
Plant Protein Database >>

DATABASE
Alternative Protein Company Database >>

See more business resources >>

Technical resources

Our Science & Technology team offers several technical resources to guide companies and scientists:

TECHNICAL PAPER
Formulating with Animal-Free Ingredients >>

TECHNICAL PAPER
Meat by the Molecule: Making Meat with Plants and Cells >>

TECHNICAL PAPER
Cellular Agriculture: An Extension of Common Production Methods >>

TECHNICAL PAPER
Cultivated Meat: Culture Medium Costs and Production Volumes >>

See more technical resources >>

For more information on NPD SupplyTrack data

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Additional plant-based resources

Bridge2Food

- Upcoming virtual plant protein summit June 22-26
- Offers events, courses, networks, consulting, and research to plant-based R&D community
- Bridge2food.com

ProVeg

- Offers many resources for plant-based companies and the food industry
- Recent report on European consumers and plant-based products
- Proveg.com

Good Food Institute

- Subscribe to our industry newsletter at www.gfi.org/insider
- View our upcoming webinars

Additional plant based resources

Forward Food

- Offers chef and foodservice staff training on cooking with plant-based ingredients
- Can consult on plant-based product selection and recipe development
- forwardfood.org

World Resources Institute

- Offers many resources on their website on how to label and position plant-based and plant-forward dishes
- Read their Playbook for Guiding Diners Toward Plant-Rich Dishes in Food Service

Brighter Green

- Chef's Good Food Handbook

Download our new State of the Industry reports at www.gfi.org/industry

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