

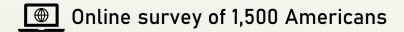
This 2022 Datassential Plant-Forward Opportunity report, in partnership with <u>The Culinary Institute of America</u>, <u>Food for Climate League</u>, and the <u>Menus of Change University Research Collaborative</u>, is a follow-up to similarly-focused reports in 2021 and 2020. In 2022 we take the pulse of consumers on the topic of plant-forward eating through the exploration of sentiments and behaviors concerning plant-based foods, plant-forward menus, sustainability, health, and more.

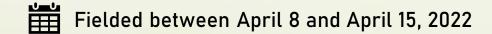
The framing of "plant-forward" is an outgrowth of the CIA-Harvard T.H. Chan School of Public Health—Department of Nutrition joint initiative, Menus of Change. The term indicates "a style of cooking and eating that emphasizes and celebrates, but is not limited to, foods from plant sources—fruits and vegetables, whole grains, legumes, nuts and seeds, plant oils, and herbs and spices—and reflects evidence-based principles of health and sustainability." In addition to whole, minimally processed—and often globally inspired—approaches to plant-forward, consumers also increasingly have wide-ranging choices around plant-based meat, dairy, and other products.

Join us as we explore consumers' eating habits and beliefs to uncover opportunities to reduce reliance on meat, dairy, and other foods from animal sources in ways that are approachable and appealing to the consumer. Read on for insights to feed menu innovation and product development, as we dive deeper into plant-forward opportunities.



METHODOLOGY:









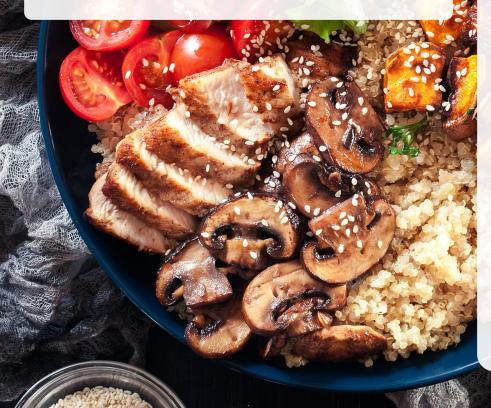
DEFINITIONS:

- Students: respondents attending college on either a part- or full-time basis
- Meat limiters: vegan, vegetarian, pescatarian, and flexitarian respondents
- Climate concerned: respondents that say climate change is extremely or very important
- Daily meat eaters: respondents that eat beef, veal, pork, or lamb on a daily basis



KEY TAKEAWAYS:

2022 PLANT-FORWARD OPPORTUNITY



- Meat is still the top frequently-consumed protein, though Gen Z indicates a potential shift away from meat.
- College students eat all protein types with greater frequency and have grand aspirations toward eating more fruits, veggies, and whole grains. Fewer consumers, overall, seek to increase meat and poultry compared to last year.
- Over half of consumers say they are concerned about the climate, and a similar proportion believes their individual food choices impact the environment.
- 104 Half of consumers think plant-based foods are better for the environment.
- Between aspirations to increase non-dairy substitutes and the desire for digestive benefits from plant-based food, consumers may (slowly) be turning away from dairy.
- Taste and affordability are top concerns for consumers to consider plant-based foods.
- 07 Mixing plant- and meat-based proteins could be key to engaging consumers.
- Meat limiters and students are more likely to view plant-based protein as healthy and complete.
- When drawing a connection between plant-forward eating and the environment, don't forget about packaging.

EATING HABITS



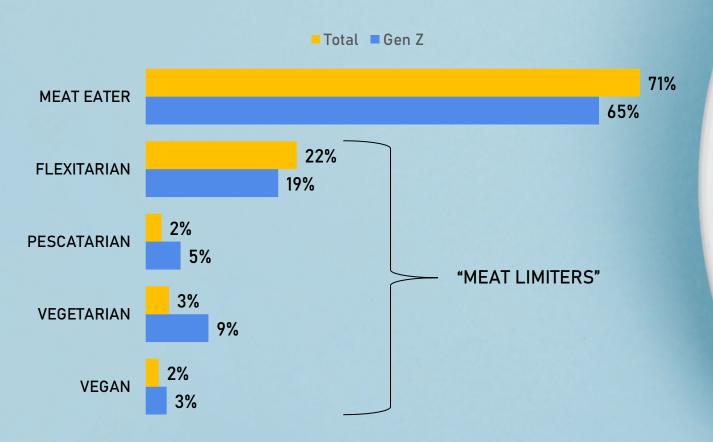
Meat is still the top frequentlyconsumed protein, though Gen Z indicates a potential shift away from meat.

Meat is the protein consumers most eat daily. While Gen Z is more likely to eat all animal proteins on a daily basis, they also have a higher proportion of "meat limiters" – consumers who eat vegan, vegetarian, pescatarian, or flexitarian diets. Millennials are the most likely generation to consume all plant-based proteins daily, though this frequent consumption is down from last year.



Most consumers are meat eaters, though 29% of the population limits consumption of meat in some way.

Over one third (36%) of Gen Z may be considered meat limiters, as Gen Z has a higher proportion of vegans, vegetarians, and pescatarians.



Which best describes the way you eat today? (I do not eat products with any animal involvement; I do not eat meat or seafood and/or fish, but I do eat dairy and eggs; I do not eat meat, but I do eat seafood and/or fish; I actively limit the amount of meat I eat, but I do not exclude meat entirely; I eat meat on a regular basis]



Over a quarter of consumers are eating meat every day.

This has not changed since last year, and slightly more consumers are eating meat weekly compared to a year ago. Consumers are eating less poultry every day in favor of weekly consumption and less seafood every day with greater occasional consumption.



How often do you eat the following types of foods?

indicates noteworthy percentage growth since 2021

indicates noteworthy percentage regression since 2021



69% of consumers eat nuts & legumes at least once a week.

Daily consumption of plant-based proteins is down overall, with the greatest downturn for tofu, tempeh, or seitan. Weekly consumption of nuts & legumes has increased.



How often do you eat the following types of foods?

indicates noteworthy percentage growth since 2021

indicates noteworthy percentage regression since 2021



Gen Z has the highest daily consumption of animal proteins.

Meanwhile, Millennials have the highest daily consumption of plant-based proteins. Millennials have decreased daily consumption across all protein sources, implying that a variety of proteins might be consumed throughout the week.

	Meat (beef, veal, pork, and lamb)	Poultry	Seafood (incl. shellfish)	Nuts & Legumes (nut butters, beans, lentils, etc.)	Other Plant Protein (tofu, tempeh, or seitan)	Plant-Based Meat or Egg (substitutes/analogs)
DAILY EATERS	27%	12%	5%	20%	6%	7%
Gen Z	35% 🕂-3%	23%	10% 🗸 -9%	18%	9% 🐶-6%	11%-6%
Millennials	31% 🗸-4%	17% 🗸 -13%	9% 🕂-12%	24% 🗸 -6%	10% 🗸-12%	i 13%√-5%
Gen X	28% 🛈+5%	9%	3% 🞝 -7%	18%	4% ₹-8%	5% ₹ -5%
Boomers	20% 🛈+4%	5%	2%	21%	2%	2%

How often do you eat the following types of foods?

indicates top demographic by percentages

indicates noteworthy percentage growth since 2021





College students eat all protein types with greater frequency than the average consumer and have grand aspirations toward eating more fruits, veggies, and whole grains.

Few consumers, overall, aspire to eat more meat and poultry – though, college students (both part- and full-time) appear to be a particularly passionate consumer group. They are more likely to consume each protein type on a daily basis, and they seek to increase consumption of all food types more than the average consumer. Fewer consumers, overall, seek to increase meat and poultry compared to last year.



Students have higher daily consumption of all protein varieties, supporting the adage that "college is a time for experimentation."

The greatest difference between students and the average consumer is for both poultry and plant-based meat, where students have 14 percentage points higher daily consumption for each.

	Meat (beef, veal, pork, and lamb)	Poultry	Seafood (incl. shellfish)	Nuts & Legumes (nut butters, beans, lentils, etc.)	Other Plant Protein (tofu, tempeh, or seitan)	Plant-Based Meat or Egg (substitutes/analogs)
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Gen X	28%	9%	3%	18%	4%	5%
Boomers	20%	5%	2%	21%	2%	2%
Students	36%	26%	17%	27%	18%	21%

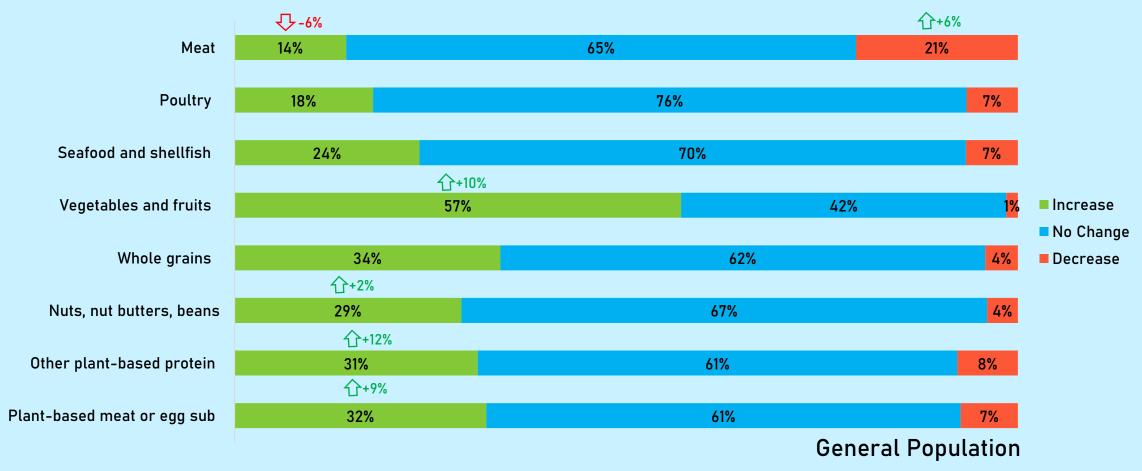
How often do you eat the following types of foods?

indicates top demographic by percentages



21% of consumers are looking to reduce meat – up from 15% last year.

Over a third of consumers are trying to increase whole grains, and more consumers are seeking to increase vegetables and fruits, other plant-based proteins, and plant-based meat or egg substitutes compared to last year.



For each of the following types of foods, are you generally trying to...?

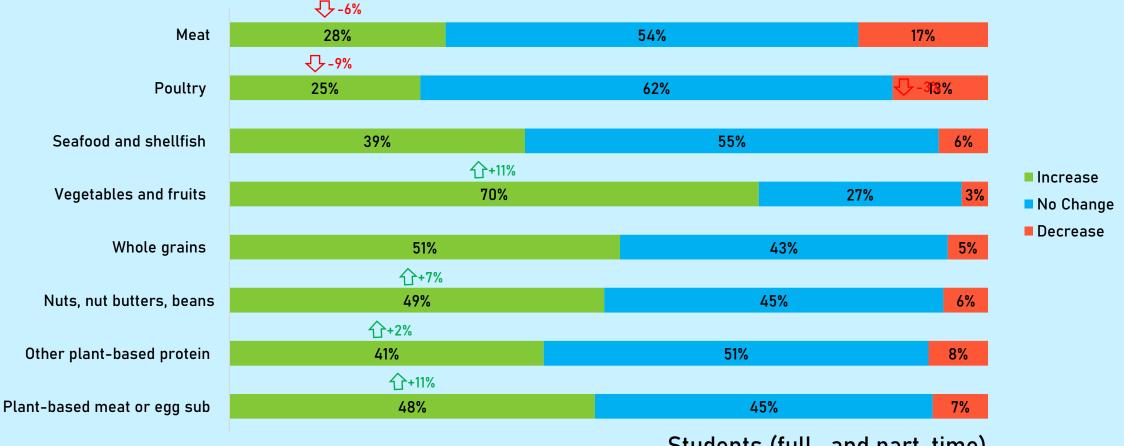
indicates noteworthy percentage growth since 2021

indicates noteworthy percentage regression since 2021



7 in 10 college students are aiming to increase fruits & veggies.

And half are trying to increase nuts, nut butters, and beans. In general, more college students seek to increase all animal and plant proteins compared to the general population, and this aspirational increase has grown the most for plant-based substitutes and nuts.



Students (full- and part-time)

For each of the following types of foods, are you generally trying to...?





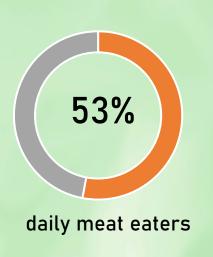


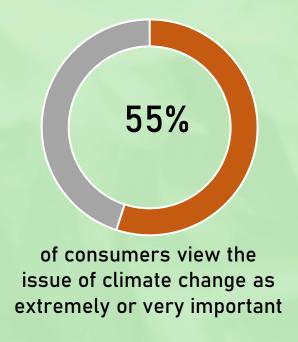




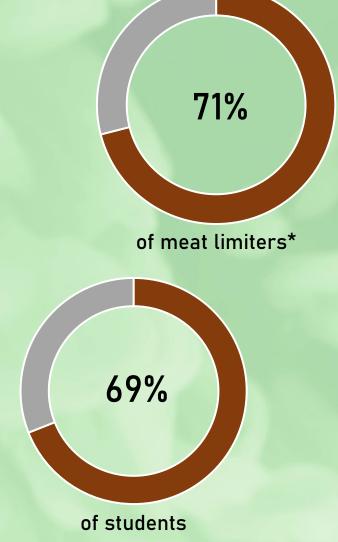
Over half of consumers consider climate change to be important.

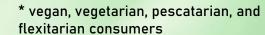
For students and meat limiters, this ratio increases to 7 in 10.





How important is the issue of climate change to you personally? (top 2 box, 5-pt. scale)





Consumers agree about the relationship between climate change and agriculture, and a majority consider their own impact.

Even more climate concerned consumers and students make this connection between food choices and environmental impact.

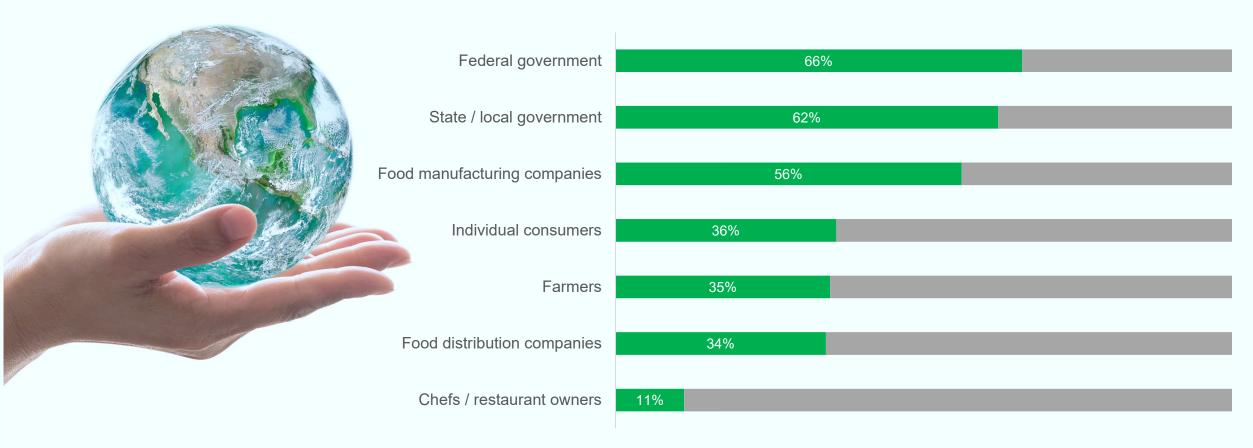


Please tell us your level of agreement with each of the following statements about food and the environment. (top 2 box, 5-pt. scale)



Consumers look to the government and food manufacturers for leadership on the climate crisis.

Chefs and restaurant industry leaders who care about planetary health have an enormous opportunity to raise the visibility of their efforts and better engage an increasingly sustainability-minded dining public.



In your opinion, which of the following people or organizations should provide greater leadership to help address the climate crisis? (showing % ranked in top 3)



Half of consumers think plant-based foods, overall, are better for the environment.

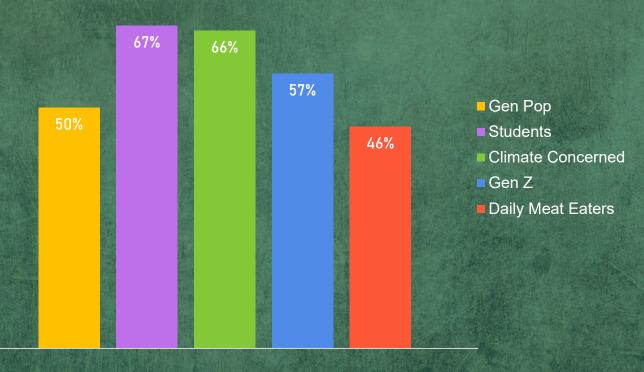
Students, those concerned about the climate, and young generations like Gen Z are more likely to consider this true; however, Gen Z is less sure about the sustainability of plant-based proteins. When it comes to plant-based meat analogues vs. plant-based whole foods, slightly more consumers favor whole foods as more environmentally friendly. In terms of action, nearly 1 in 5 consumers are already choosing environmental retail brands, and most consumers are at least open to plant-based foods.



Half of consumers think plant-based foods, in general, are better for the environment.

Gen Z is statistically more likely to think plant-based foods are better for the environment.

"Plant-based foods (vegetables, nuts, grains, etc.) are *generally* better for the environment than animal-based foods (meat, dairy, eggs, etc.)"



Please tell us your level of agreement with each of the following statements about food and the environment. (top 2 box, 5-pt. scale)



And almost half of consumers believe that plant-based protein is more sustainable.

This number is greater among limiters*, climate concerned consumers, students, and Millennials. Fewer Gen Z and daily meat eaters believe this to be true.

"Plant-based protein is a more sustainable source of protein than animal-based protein"

* vegan, vegetarian, pescatarian, and flexitarian consumers

Please tell us your level of agreement with each of the following statements. (top 2 box, 5-pt. scale)

^{68%} of meat limiters* 64% of climate concerned 47% 60% of students Gen. Pop. 53% of millennials 43% of gen Z 39% of daily meat eaters DATASSE

Slightly more consumers consider plant-based whole foods to be the more climate-friendly option compared to meat analogues.

Fewer daily meat eaters consider either of these options to be more climate-friendly.

Meat Limiters: 67%
Climate Concerned: 64%
Students: 61%
Daily Meat Eaters: 44%

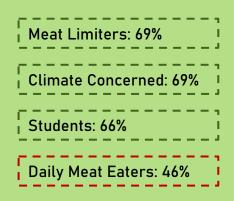
Plant-based to replicate meat

48%

We would have less of a negative impact on the environment by reducing our consumption of meat and eating more plant-based foods that are meant to replicate meat

Whole food plant-based

51%



We would have less of a negative impact on the environment by reducing our consumption of meat and eating more whole food plant-based foods that are not meant to replicate meat

In 2021, 56% of consumers believed plant-based foods (both meat analogues and whole foods) would have less of a negative impact on the environment.

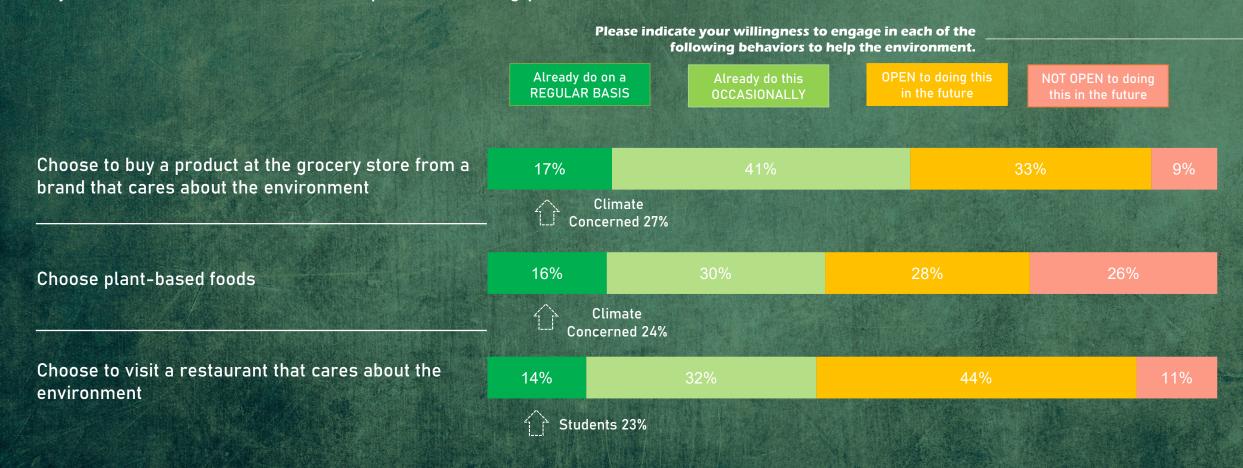
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Indicates statistically higher
Indicates statistically lower



Nearly 1 in 5 consumers are already choosing environmentally-conscious retail brands, and more consumers are open to trying environmentally-conscious restaurants.

Nearly 3 in 4 consumers are at least open to choosing plant-based foods.





DAIRY & NON-DAIRY





Between aspirations to increase non-dairy substitutes and the desire for digestive benefits from plant-based food, consumers may (slowly) be turning away from dairy.

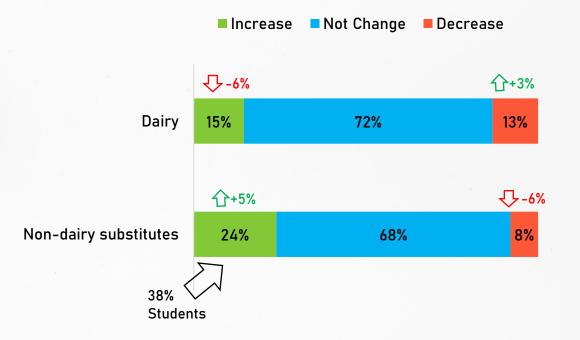
Oat milk is exploding on restaurant beverage menus, and well-known almond milk and oat milk have also grown on beverage menus over the past 4 years. Plant-based cheese has more than doubled on menus in recent years.





More consumers are aiming to increase non-dairy substitutes.

And, the want to increase dairy is trending downward.



For each of the following types of foods, are you generally trying to...?

indicates noteworthy percentage growth since 2021

indicates noteworthy percentage regression since 2021



A third of consumers think plant-based dairy tastes good and prefer dairy alternatives.

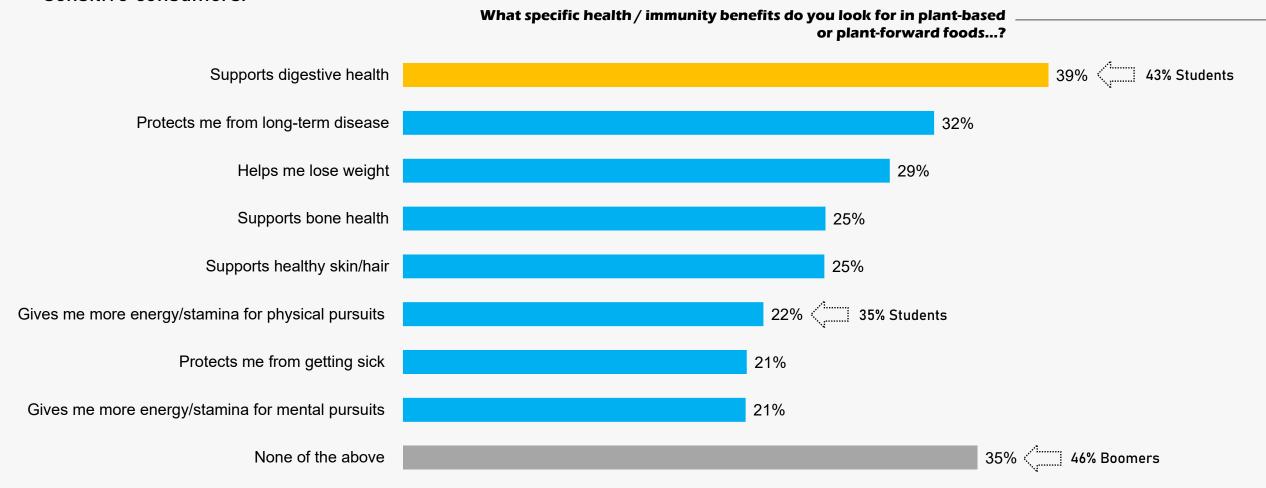
More daily meat eaters prefer dairy alternatives than the average consumer, possibly due to dietary or digestive limitations.

		AGREE	DISAGREE	
Plant-based dairy tastes just as good as animal-based dairy	33%	Greater among Students (55%) Lower among Daily Meat Eaters (29%)	Greater among Boomers (44%) Greater among Daily Meat Eaters (41%)	35%
I prefer dairy alternatives to animal-based dairy	32%	Greater among Students (52%) Slightly greater among Daily Meat Eaters (35%)	Greater among Boomers (53%) Slightly greater among Daily Meat Eaters (42%)	38%



When it comes to health or immunity benefits, digestive health is the most sought-after benefit from plant-based foods.

Even more students look for this benefit, which is something non-dairy alternatives can provide for lactose sensitive consumers.





On restaurant beverage menus, almond milk is the topoffered alternative milk and has been growing over the past 4 years.

Oat milk is skyrocketing on beverage menus, primarily as part of coffee drinks.

	PENETRATION	4-YEAR GROWTH
Almond Milk	3.3%	+57%
Coconut Milk	2.2%	+104%
Soy Milk	2.1%	-14%
Oat Milk	1.4%	+++%
Rice Milk	0.3%	-



MenuTrends

Almond milk is the most appealing non-dairy milk to consumers.

This is aided by the fact that almond milk is the most familiar. Oat milk has potential to increase in appeal as more and more consumers become familiar with it.

	KNOW IT	TRIED IT	HAD MANY TIMES	LIKE OR LOVE IT
Almond Milk	92%	62%	19%	44%
Coconut Milk	88%	54%	9%	35%
Plant Based Milk	68%	39%	14%	25%
Soy Milk	85%	43%	7%	22%
Oat Milk	72%	34%	7%	22%
Hazelnut Milk	62%	25%	4%	19%
Cashew Milk	65%	26%	4%	18%
Rice Milk	61%	22%	3%	14%
Walnut Milk	51%	18%	3%	11%
Pistachio Milk	40%	12%	2%	9%
Macadamia Milk	41%	13%	2%	8%
Flax Milk	39%	11%	1%	6%
Quinoa Milk	32%	9%	2%	6%
Hemp Milk	32%	9%	1%	5%
Pea Milk	22%	7%	1%	5%



Plant-based cheese has gained traction on restaurant menus.

These varieties (including non-dairy cheese brands, vegan cheddar, cashew cheese, and more) have more than doubled on menus over the past 4 years. 4 in 10 consumers who have tried vegan cheese like or love it.

plant-based / vegan cheese +110%

growth

18% of consumers have tried vegan cheese

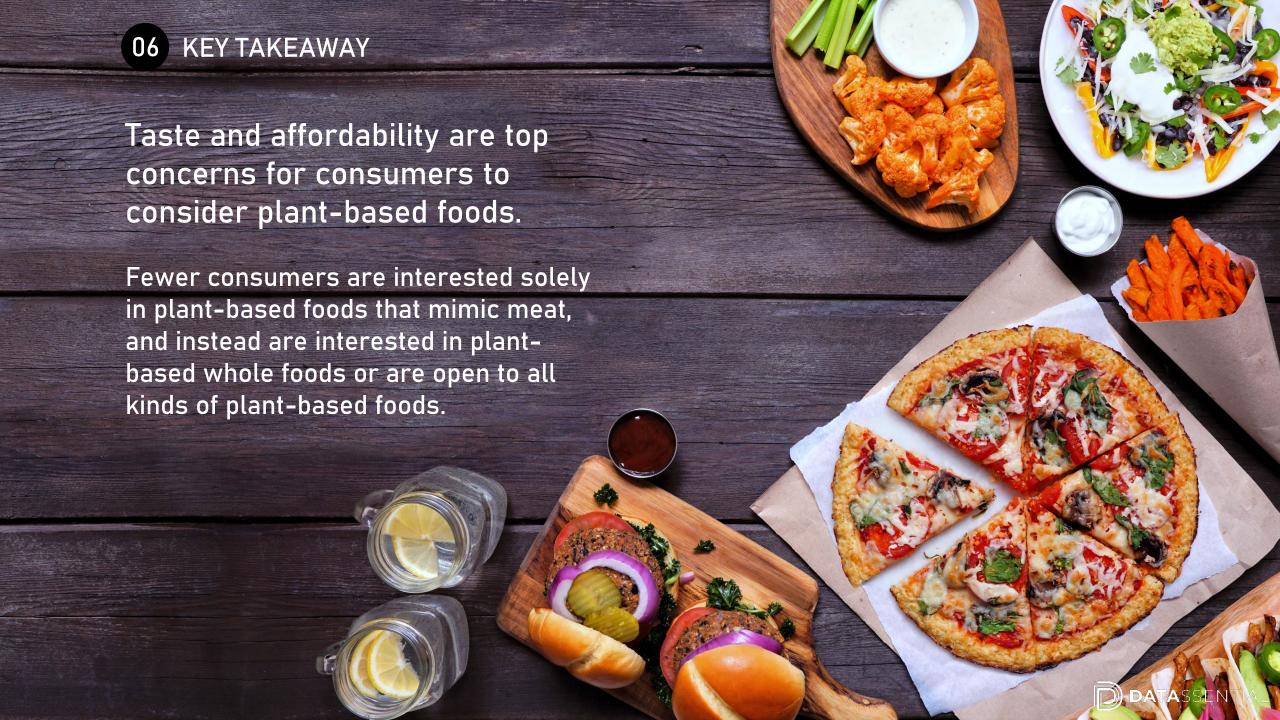
plant-based / vegan cheese
4.5%
penetration on menus

43%
love or like vegan cheese among those who have tried it



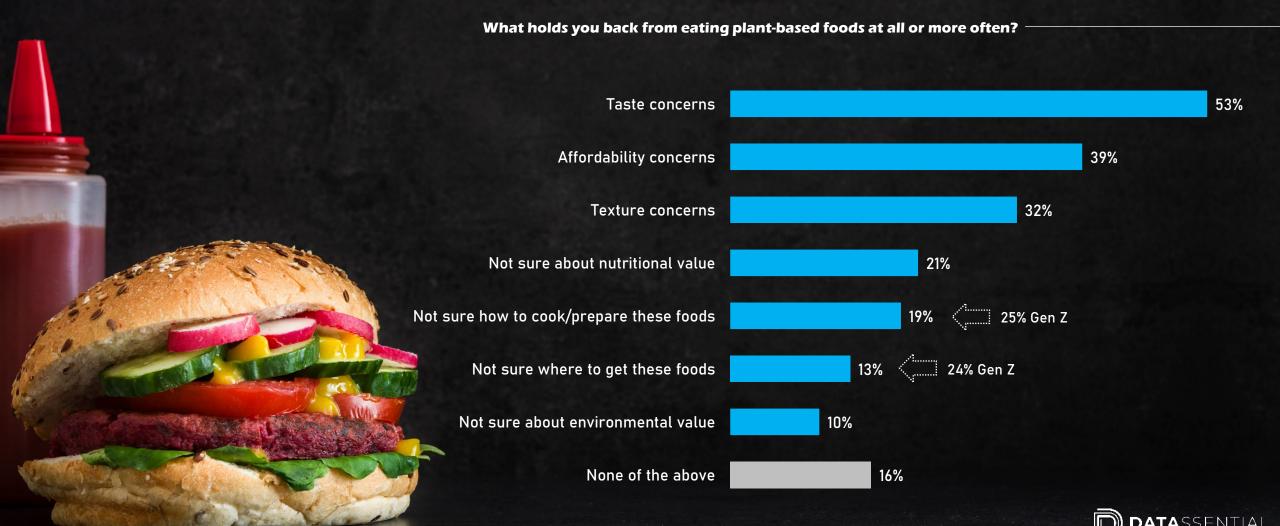
MenuTrends





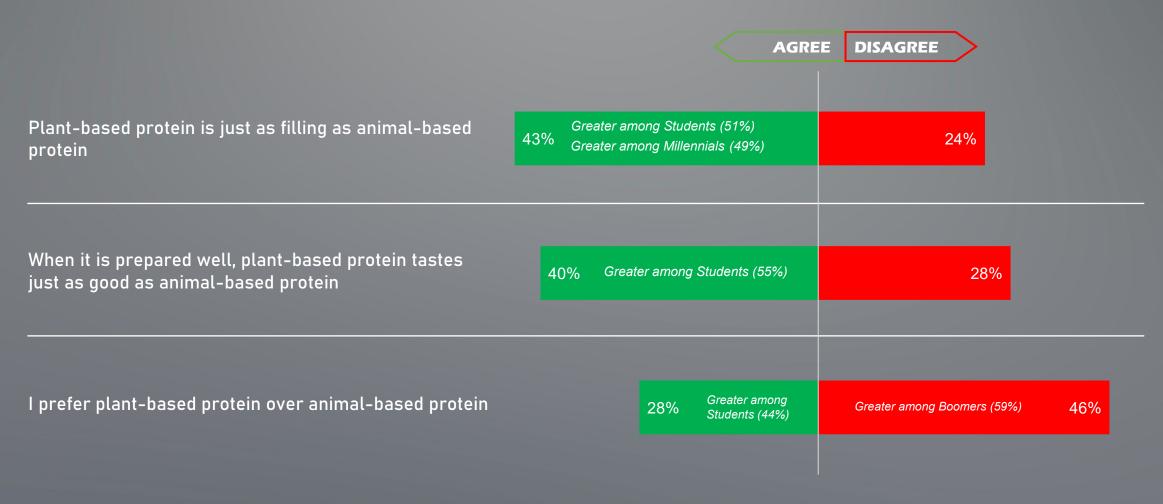
Taste and affordability concerns are the two biggest roadblocks for consuming plant-based foods.

Gen Z is more likely to be unsure about how to source and prepare plant-based foods, perhaps due to limited cooking experience.



Consumers may need additional convincing about how filling and tasty plant-based protein can be.

Over half of students are sold on its potential for tasting good.

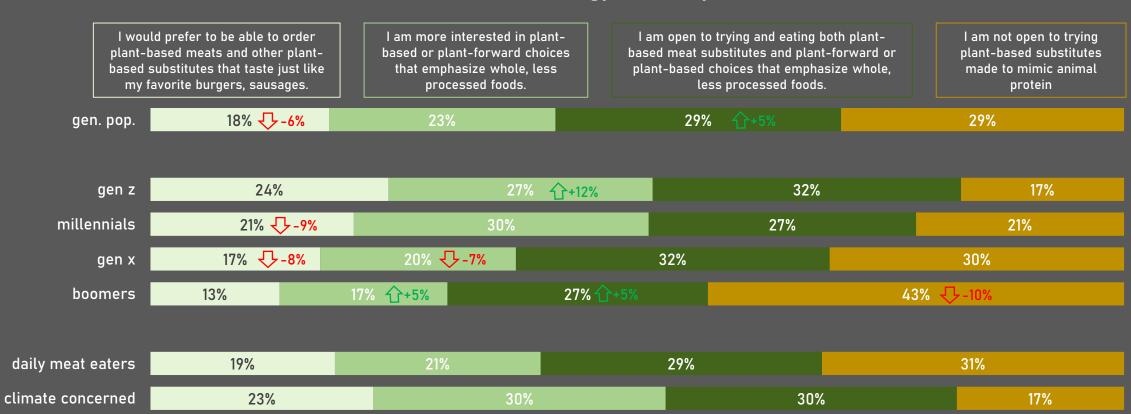




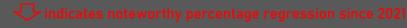
Consumers tend to prefer whole, less processed plant-based foods over plant-based meat substitutes, although many are open to trying both.

While still lagging behind other generations, Boomers are more open to plant-based and plant-forward foods than they were last year. 7 in 10 daily meat eaters are at least open to either meat analogues, whole plant-based foods, or both.

Which of the following would be your preference when ordering plant-based or plant-forward foods at a restaurant?



indicates noteworthy percentage growth since 202

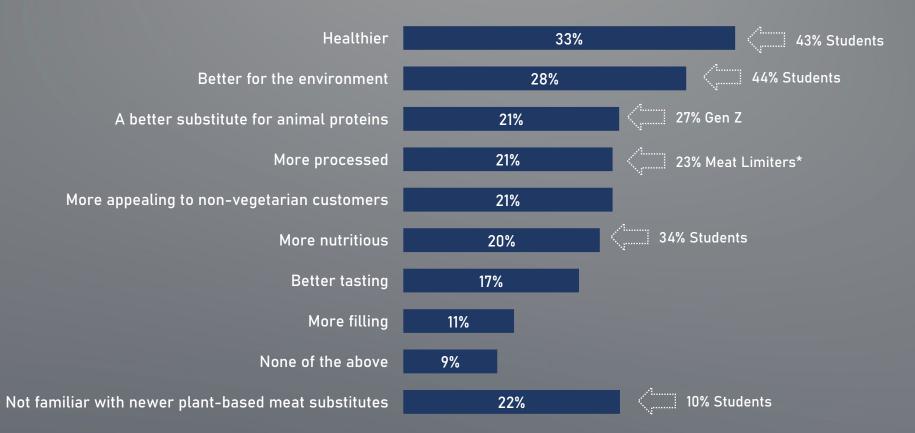




Only 1 in 3 consumers think new meat analogues are healthier than traditional plant-based options.

1 in 5 consumers are unfamiliar with these overall – awareness could be an issue for adoption of new plant-based meat substitutes. Students and Gen Z are more likely than average to think new meat analogues have all the positive properties below.

Compared to traditional plant-based options (beans, nuts/seeds, whole grains, soy
— foods, etc.), do you believe that newer plant-based meat substitutes (such as
burgers developed by Impossible Foods and Beyond Meat) are...?





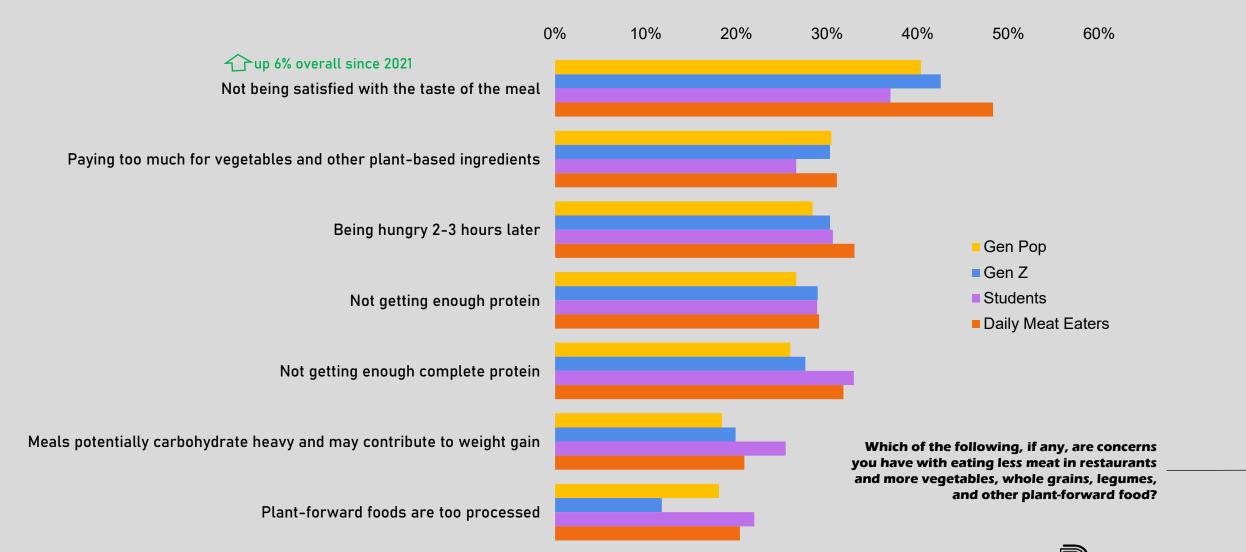
Mixing plant- and meat-based proteins could be key to engaging consumers.

With concerns about taste and affordability regarding lower meat consumption, consumers do show interest in mixed protein dishes. Many consumers are willing to pay at least comparable prices for plantforward menu items, but it may depend on the meal. Regarding availability at restaurants and retail, most consumers report that they find plant-forward options only some of the time or not at all.



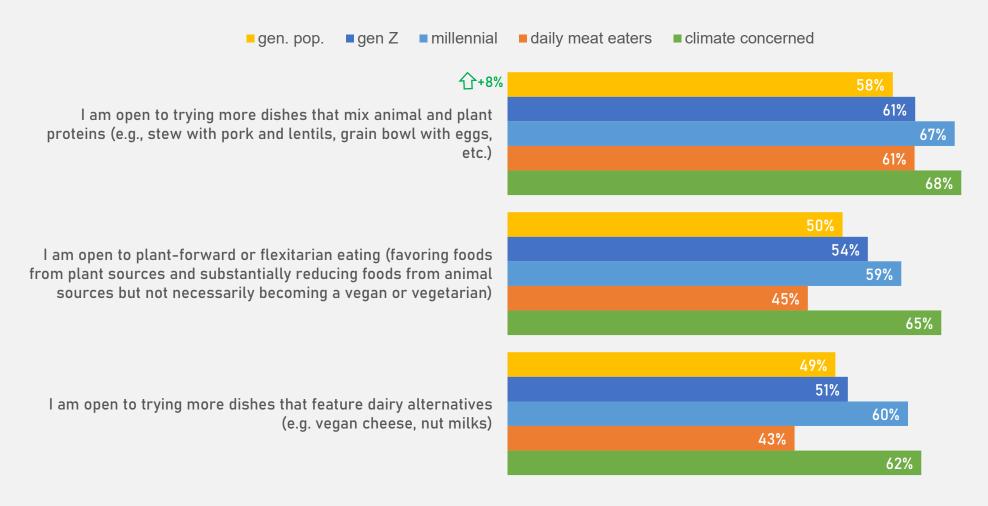
At restaurants, taste and affordability are the top concerns for eating less meat.

Daily meat eaters are not significantly more concerned about getting enough protein – but they are much more concerned about taste. Gen Z is especially unconcerned about plant-forward foods being too processed.



More consumers are open to trying dishes with mixed animal and plant proteins.

Daily meat eaters are more likely than average to be open to trying these dishes.



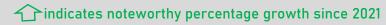




Consumers are more interested in dishes with a small amount of meat than in dishes without any meat.

Younger generations and students are more interested in all types of plant-forward dishes than the average consumer, and they like the idea of globally-inspired plant-forward and plant-based dishes much more than the average consumer.

Please tell us your interest in the following. (top 2 box, 5-pt. scale)	Gen Pop.	Gen Z and Millennials	Gen X and Boomers	Students	Daily meat eaters
Plant-forward dishes with a small amount of meat, fish, poultry, or dairy	1 0+4% 45%	51%	40%	65%	45%
Plant-forward dishes with a small amount of meat or dairy that are inspired by world cuisines (e.g., Mediterranean, Asian, Latin American)	<u>Դ</u> +4% 40%	47%	35%	53%	39%
Plant-based dishes that exclude meat but include dairy/eggs and are inspired by world cuisines (e.g., Mediterranean, Asian, Latin American)	35%	43%	28%	56%	32%
Plant-based dishes that exclude any animal products and are inspired by world cuisines (e.g., Mediterranean, Asian, Latin American)	♣-6% 32%	37%	28%	49%	26%







Plant-forward dishes are exploding on restaurant menus.

Trending dishes include a range of items, like burgers imitating meat, meat-optional bowls and loaded fries, meat-free pasta and fried rice dishes, and items where veggies are the star.

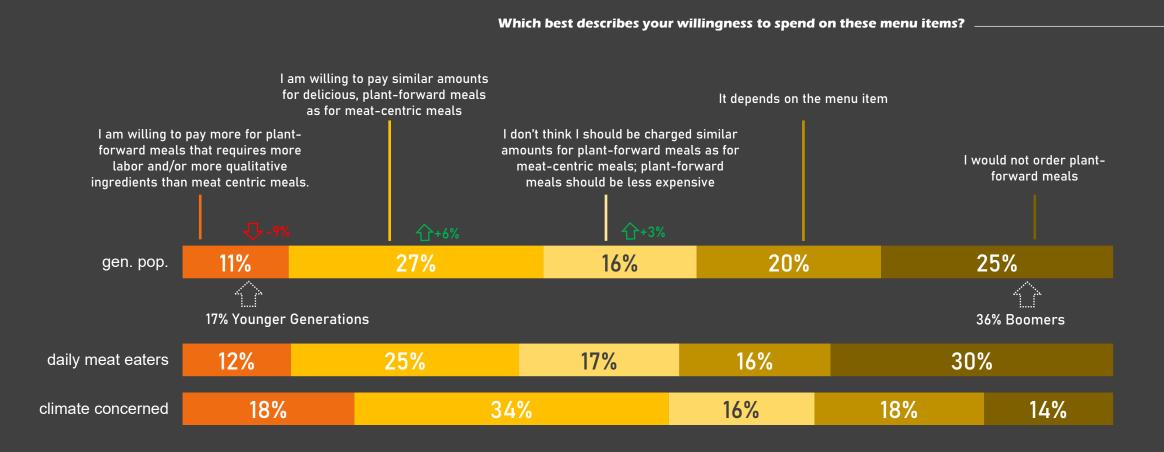
	MENU PENETRATION	4-YEAR GROWTH		
Plant Based Burger	6.3%	+++%		
Cauliflower Wing	0.2%	+++%		
Mediterranean Bowl	0.5%	+763%		
Buffalo Cauliflower	1.1%	+476%		
Avocado Toast	6.7%	+326%		
Buddha Bowl	0.4%	+299%		
Kimchi Fries	0.2%	+199%		
Loaded Tots	1.3%	+199%		
Acai Bowl	0.7%	+191%		
Egg Fried Rice	1.7%	+109%		
Elote	2.5%	+101%		
Cacio E Pepe	1.4%	+99%		
Fried Brussels Sprouts	1.7%	+79%		
Loaded Fries	1.9%	+67%		
Kimchi Fried Rice	0.8%	+66%		





Many consumers willing to order plant-forward meals are also willing to pay a price comparable to meat; however, willingness sometimes depends on the menu item.

Younger generations show greater willingness to pay a premium for plant-forward meals.

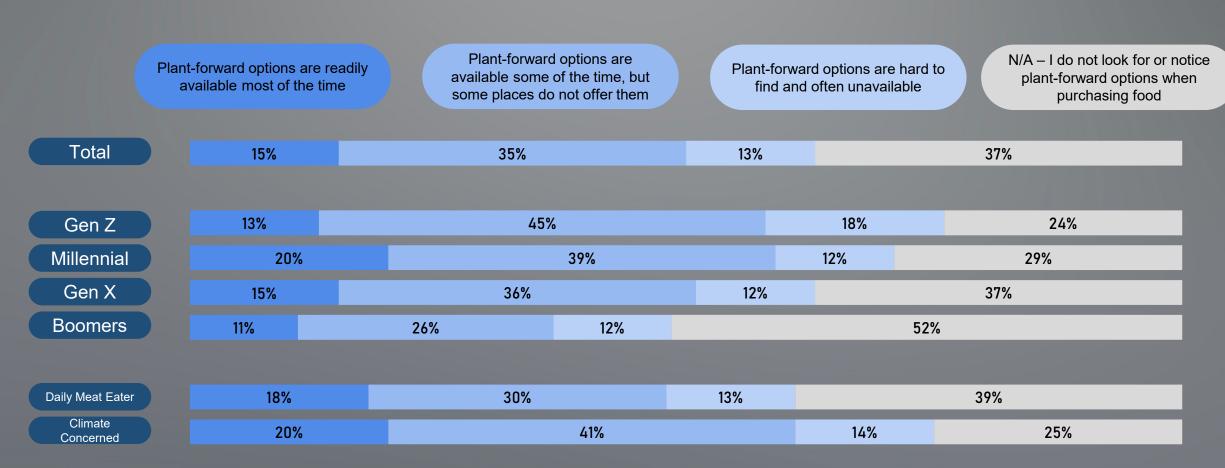






Consumers who look for plant-forward options find them available only some of the time.

Millennials are nearly twice as likely as Boomers to believe plant-forward options are readily available. Boomers and daily meat eaters are most likely to not even look for plant-forward options when purchasing food.







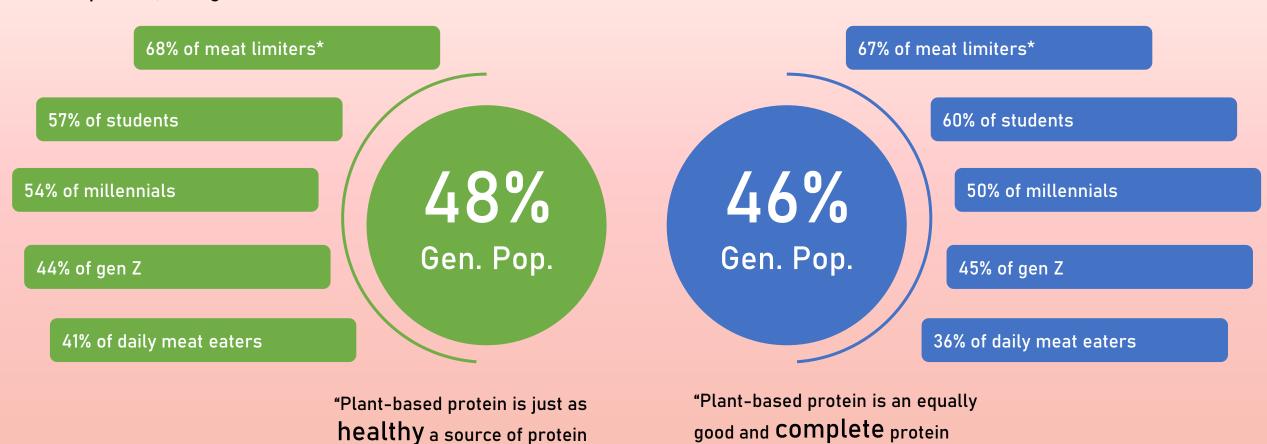
Meat limiters* and students are more likely to view plant-based protein as healthy and complete.

Consumers in general view plantbased whole foods as healthier than meat analogues. Plant-based and plant-forward foods are seen more as potential enablers of digestive health and long-term health, vs. immediate immunity boosters.



Almost half of consumers consider plant-based protein just as healthy as animal-based protein.

Fewer consumers consider plant-based protein as complete. More Millennials believe in these health properties of plant-based protein, though fewer Gen Z consumers do.



source as animal-based protein"

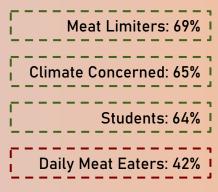


as animal-based protein"

^{*} vegan, vegetarian, pescatarian, and flexitarian consumers

More consumers consider plant-based whole foods to be healthier.

Slightly more meat limiters and those concerned about the climate consider plant-based whole foods to be healthier, though more than 6 in 10 find both types of plant-based foods to be healthy.

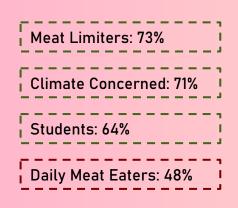


Plant-based to replicate meat

50%

We would be healthier by reducing our consumption of meat and eating more plant-based foods that are meant to replicate meat Whole food plant-based

55%



We would be healthier by reducing our consumption of meat and eating more whole food plant-based foods that are not meant to replicate meat

In 2021, 62% of consumers believed plant-based foods (both meat analogues and whole foods) would make us healthier.

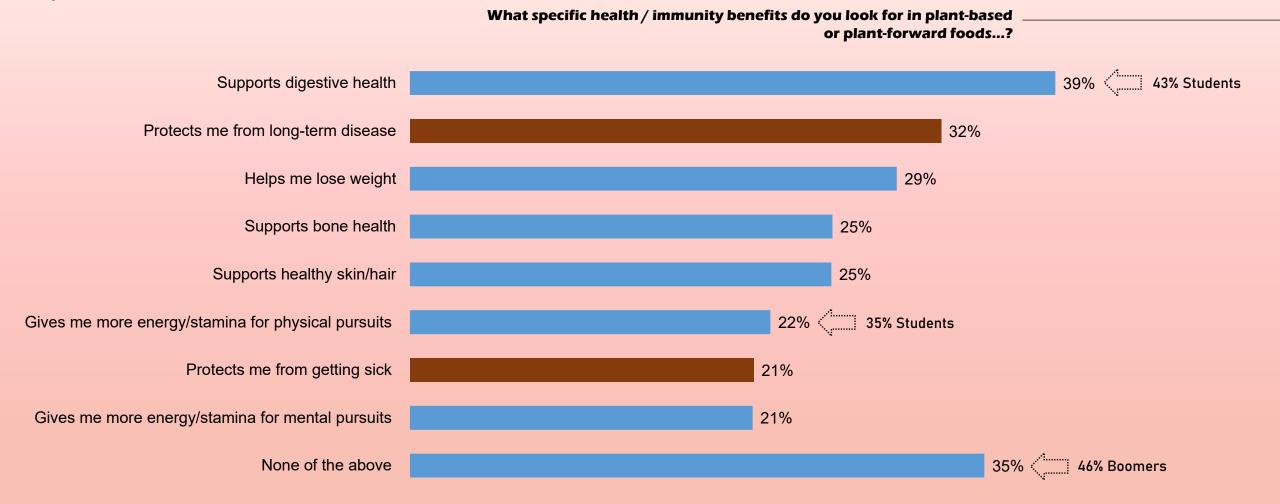


Indicates statistically higher
Indicates statistically lower



More consumers seek out long-term disease protection than near-term sickness protection in plant-based foods.

The desire for digestive health also relates to this notion of a long-term healthy lifestyle achieved through plant-based foods.





PACKAGING



When drawing a connection between plantforward eating and the environment, don't forget about packaging.

More than three-quarters of consumers believe packaging relates to the environment – and 9 in 10 climate-concerned consumers believe this. With consumers actively seeking out environmental packaging, climate-friendly foods alone won't do the trick.



A staggeringly high percentage of consumers associate packaging with environmental impact.

For those concerned about the environment, this is nearly 9 in 10 consumers. Boomers share this association more than average, and more than Gen Z.

"The type of material used to package food has an impact on the environment" 84% of high-income HHs (\$100K+)

83% of students

82% of meat limiters*

82% of boomers

88% of climate concerned

Please tell us your level of agreement with each of the following statements about food and the environment. (top 2 box, 5-pt. scale)



^{*} vegan, vegetarian, pescatarian, and flexitarian consumers

Most consumers choose foods with recyclable or compostable packaging at least occasionally.

Almost a third of climate-concerned consumers are doing this on a regular basis.

"Choose foods that come in recyclable / compostable packaging"







KEY TAKEAWAYS RECAP

Though meat is still the top frequently-consumed protein, Gen Z has a higher proportion of vegans, vegetarians, and pescatarians compared to the general population, portending a possible shift away from meat. College students eat all varieties of protein with greater frequency than average, and 7 in 10 aim to increase intake of fruits and vegetables. The overall number of consumers looking to increase meat consumption has gone down compared to last year.

Over half of consumers say they are concerned about the climate, and a similar proportion believes their individual food choices impact the environment. Half of consumers think plant-based foods overall are better for the environment, with slightly more consumers favoring whole foods as more climate-friendly compared to plant-based meat substitutes.

Between aspirations to increase non-dairy substitutes and the desire for digestive benefits from plant-based food, consumers may (slowly) be turning away from dairy. On restaurant menus, dairy alternatives like oat milk, coconut milk, and almond milk have been taking off in terms of growth over recent years, and so has plant-based cheese.

Taste and affordability are top concerns for consumers when it comes to considering both a) eating more plant-based foods in general, and b) eating less meat at restaurants. Mixing plant- and meat-based proteins could be key to engaging consumers; after all, compared to last year, consumers show an increased willingness to try plant-forward meals with a little meat or dairy added in, and this is proportionally higher for younger generations and students. Younger consumers and students are also more likely to be interested in both plant-forward and fully meat-free meals with global influences.

When it comes to health and nutrition, meat limiters and students are more likely to view plant-based protein as healthy and complete. Consumers in general view plant-based whole foods as healthier than meat analogues.

For operators engaging with consumers about the environment and sustainability, don't forget about packaging. Most consumers already choose foods with recyclable or compostable packaging at least occasionally.



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