QUARTZ MEMBERSHIP

# Meat alternatives are the future of food

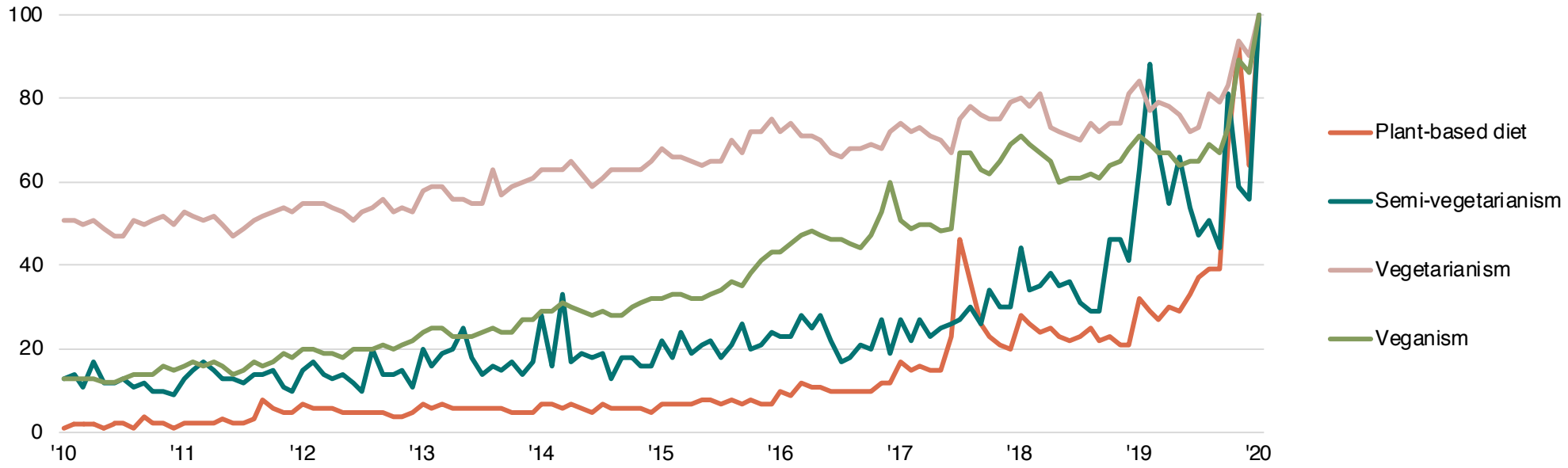
Member exclusive by  Dasia Moore

PHOTO BY EDI LIBEDINSKY ON UNSPLASH

# We are in a new era of meat alternatives

Barclays projects the meat alternative market will be worth $140 billion by 2030, about 14% of the current value of the global meat industry. Meat-free diets are hardly new. There's some evidence that early primates were vegetarian, and humans have avoided eating animals as a matter of principle for centuries. But in recent years, public interest—and private sector investment—in alternatives to omnivorous diets has soared. Meat alternatives have also gotten more sophisticated with the advent of high-tech plant-based proteins and cell-cultured meat.

**Monthly popularity of selected search topics on Google, 2010-2020**
Popularity is relative to each topic's most popular month

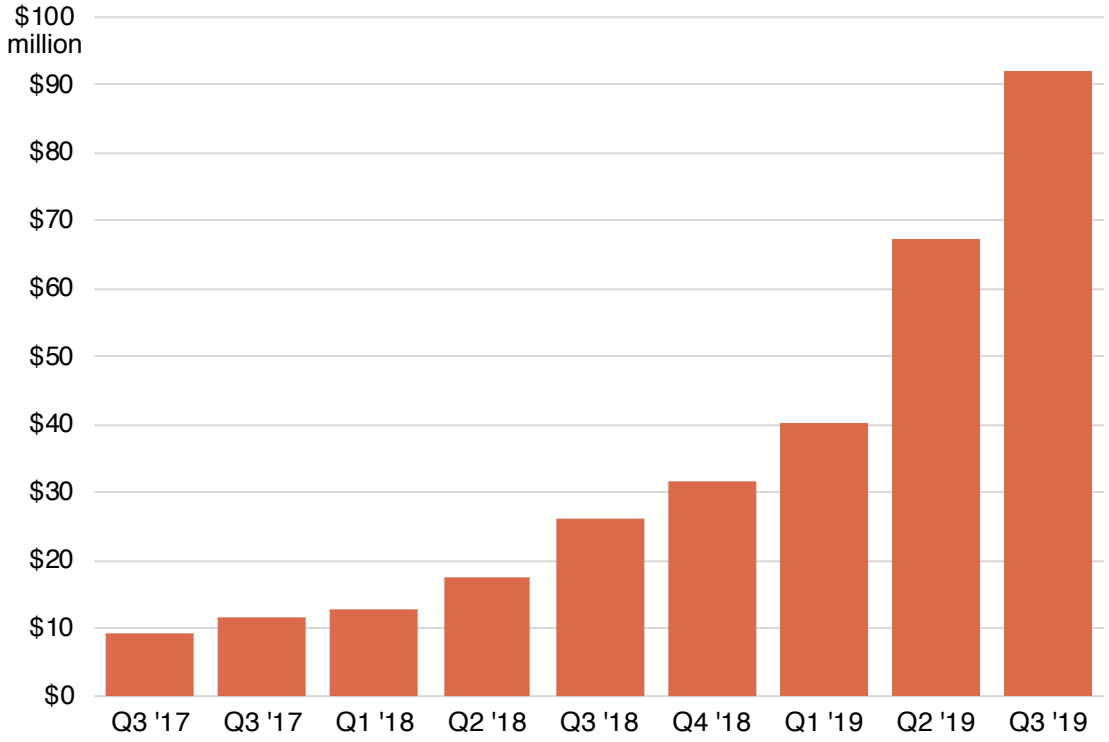


# Plant-based meat alternatives are becoming big business

Veggie burgers have been around for a while, but recently they've gotten a high-tech makeover. Plant-based protein startups Beyond Meat and Impossible Foods both make products that are supposed to taste like real beef. Famously, the Impossible Burger "bleeds" heme, a red-colored protein that also adds a beefy flavor. Both companies have caught investors' attention. Beyond was valued at $6.9 billion as of this writing. Impossible was valued at $4 billion.

Though these US-based companies led the realistic-meatless-burger boom, international competition is heating up, especially in China, where the government has encouraged citizens to eat less meat. Whole Perfect Food, one of at least five Chinese plant-based food startups, rakes in $44 million annually on its imitations of duck sauce, bacon, and fish.

**Beyond Meat's quarterly revenue has grown nearly 10-fold since 2017**
At the same time, it remains a long way behind top meat industry companies like Tyson Foods, which brought in $11 billion in Q3 2019.

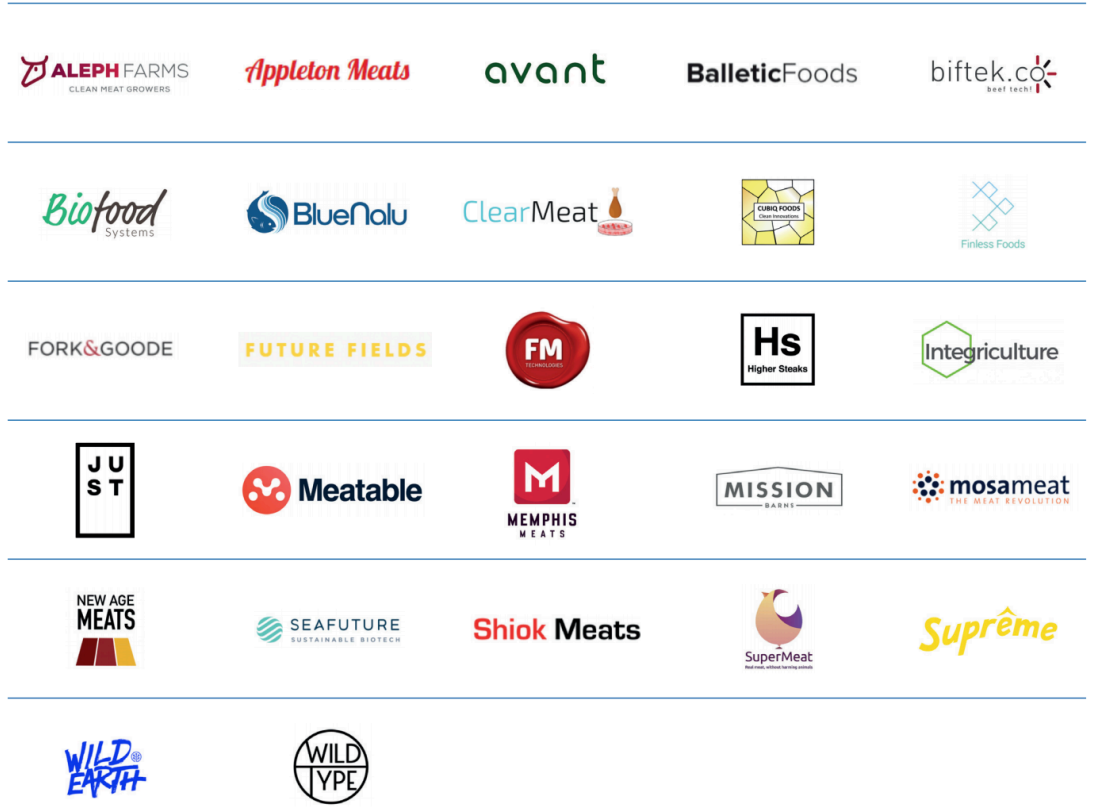


# Cell-cultured meat could be the next big thing

Plant-based meat alternatives can only get so close to tasting and feeling like meat. But another option, cell-cultured meat, promises to taste like the real thing because it *is* the real thing. Cultured meat is made by extracting cells from a living animal. Under the right conditions, those cells grow into muscle and fat tissue. The result is a product that has the same nutritional profile, taste, color, and texture of conventional meat. It just doesn't require industrial farming or killing of animals. As Pippa Bailey of IPSOS put it, "You can have your meat without eating it."

Cultured meat has yet to hit mass markets: it's still very expensive to create. But when it does, it is likely to shake up the meat and meat alternatives industries. Even without products on the market, cultured meat companies have raised $140 million since 2015.

**The companies developing cell-cultured meat**



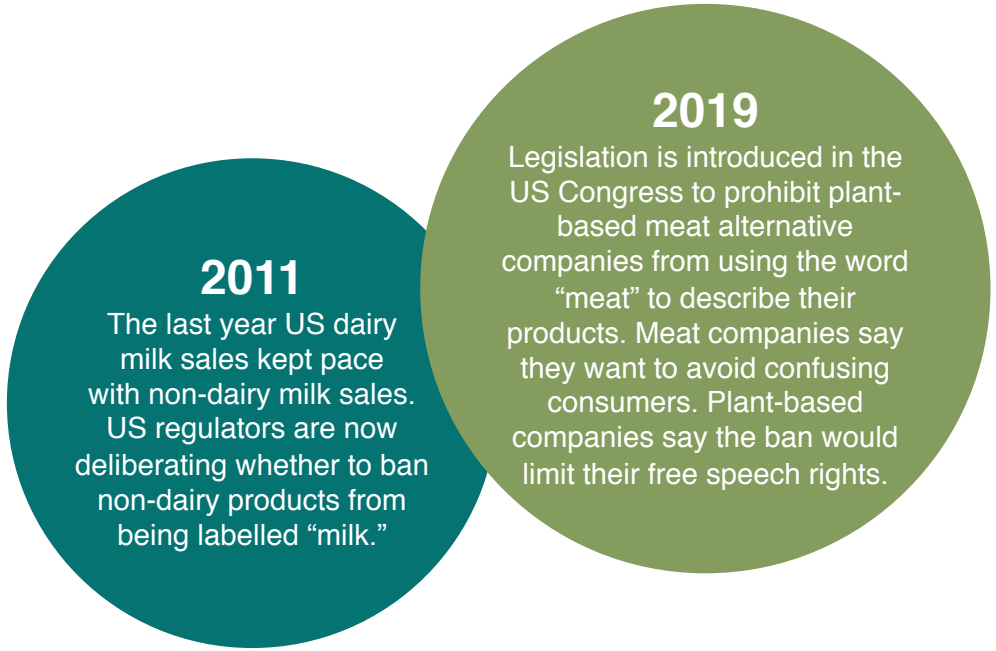

THE GOOD FOOD INSTITUTE.

## But is “lab-grown” meat… meat?

What we’re calling cell-cultured meat does not actually have a generally agreed-upon name. Media latched onto the term “lab-grown meat” early on, but researchers say their meat won’t actually be made in labs once it’s mas-produced. Instead, it will be cut and packaged in factories very similar to conventional meat processing plants. Of course, the conventional meat industry is likely to contest the fact that these products can be called “meat” at all. The beef lobby is already fighting to keep plant-based meat alternatives clearly labelled and out of the meat section.

Cultured meat producers want a name that will gain consumers’ trust. Here are a few they’ve tossed around:

- Cell-based meat
- Cell-cultured meat
- Clean meat
- Cultivated meat
- *In vitro* meat
- Slaughter-free meat

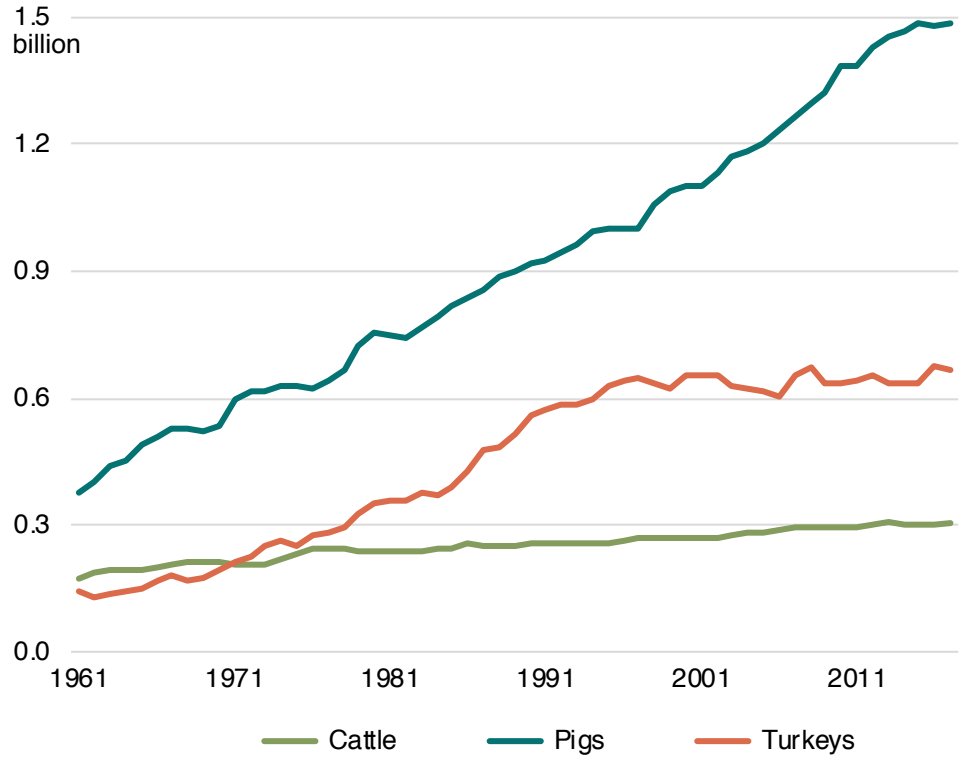


# Behind the movement to eat less meat

In Quartz's field guide to the future of meat, reporter Chase Purdy listed three concerns driving interest in meat alternatives:

- **Nutrition.** In 2015, the World Health Organization said that nutrition science suggested red meat was linked to some cancers. Other research has since made clear that eating moderate amounts of meat is okay, but the message—and fears—stuck.
- **Ecology.** Climate science has long shown that animal agriculture is not great for the Earth. The beef industry is the biggest culprit, thanks to its high methane emissions.
- **Ethics.** Tens of billions of animals die every year to feed humans—often after living under horrific conditions. In 2017, we slaughtered more than 69 billion cows, pigs, chickens, and turkeys.

**Cows, pigs, and turkeys slaughtered for meat globally**
Humans kill so many chickens that including them on this graph would make it hard to read the other data.

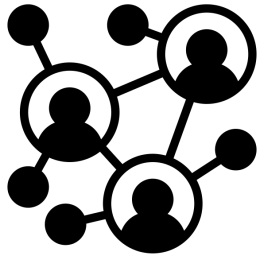


## Why now?

Health, environmental, and ethical arguments for eating less meat have always existed, but several factors converged to make this moment ripe for meat alternatives and shifting diets.

**The reality of climate change** is rapidly becoming more apparent as people around the world experience more frequent, more powerful climate-related disasters. Since 2008, several reports have named the meat industry as a key culprit in climate change.

A wave of research questioning **the health impact of meat** also began in the 2000s. Research about antibiotic resistance tied to the use of antibiotics in farm animals and links between red meat and colorectal cancers caused particular concern.



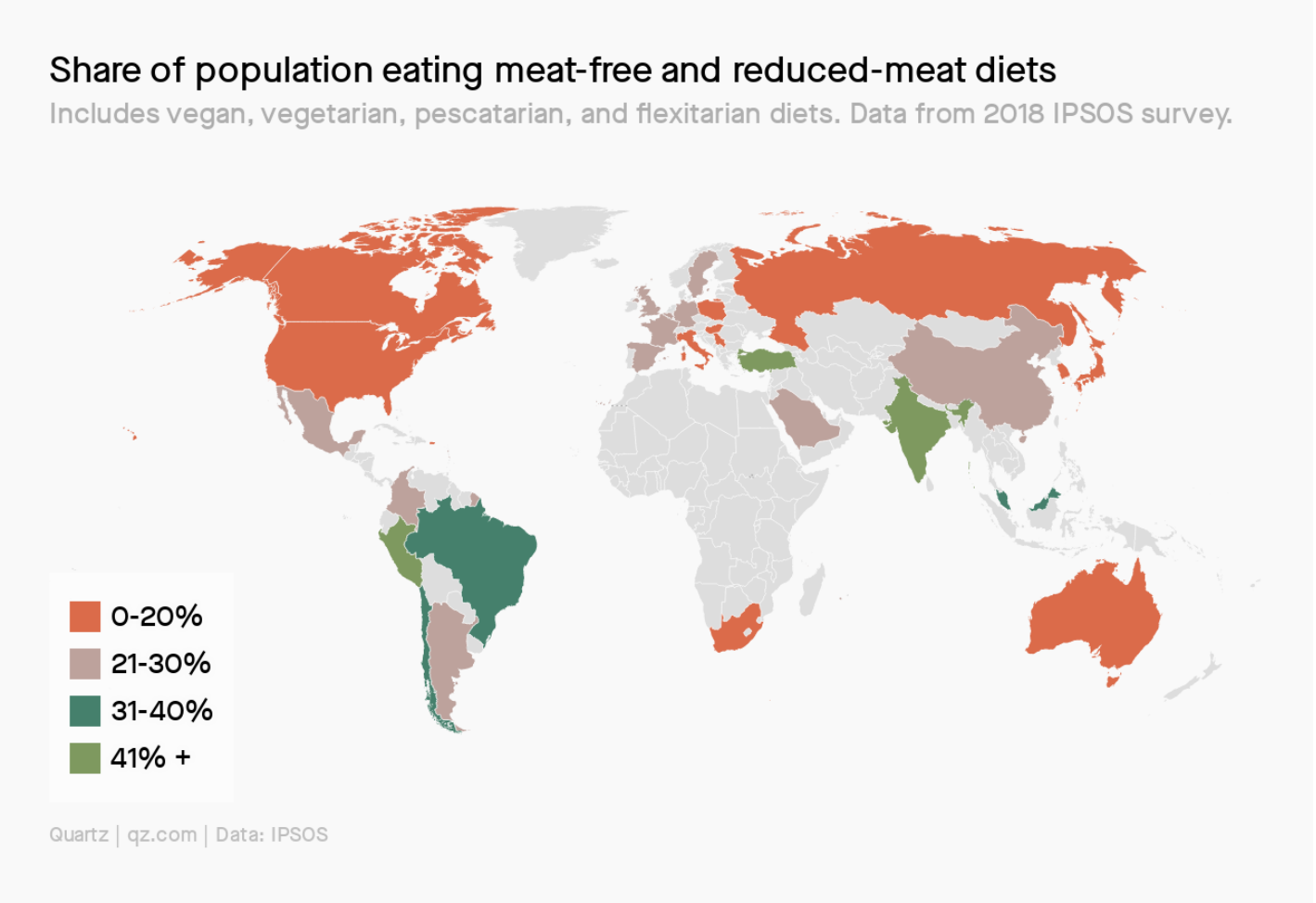
At the same time that climate and nutritional science have presented new information, the rise of **technology and social media** have made that information more readily available. Social media has also fueled diet trends and visibility for new foods.

Entrepreneurs have been able to seize the moment thanks to a boom in **venture capital** and rapidly-developing **scientific technology** that allows them to offer meat alternatives to consumers who aren't ready to give up the taste or protein they get from eating real meat.

# The geography of meat resistance

Some countries have low meat consumption levels due to religious and cultural traditions. As these economies grow, the meat alternatives industry is expanding dietary offerings. In wealthy countries that eat a lot of meat, the industry is transforming diets: new options, high-tech imitations, and cultured meat are entering wealthy markets at the same time that growth in meat consumption is slowing.

A handful of countries are leading the industry forward. Israel's government has invested in cultured meat startups, and at least three such companies are Israeli. The US and the Netherlands are also home to multiple cultured meat startups.



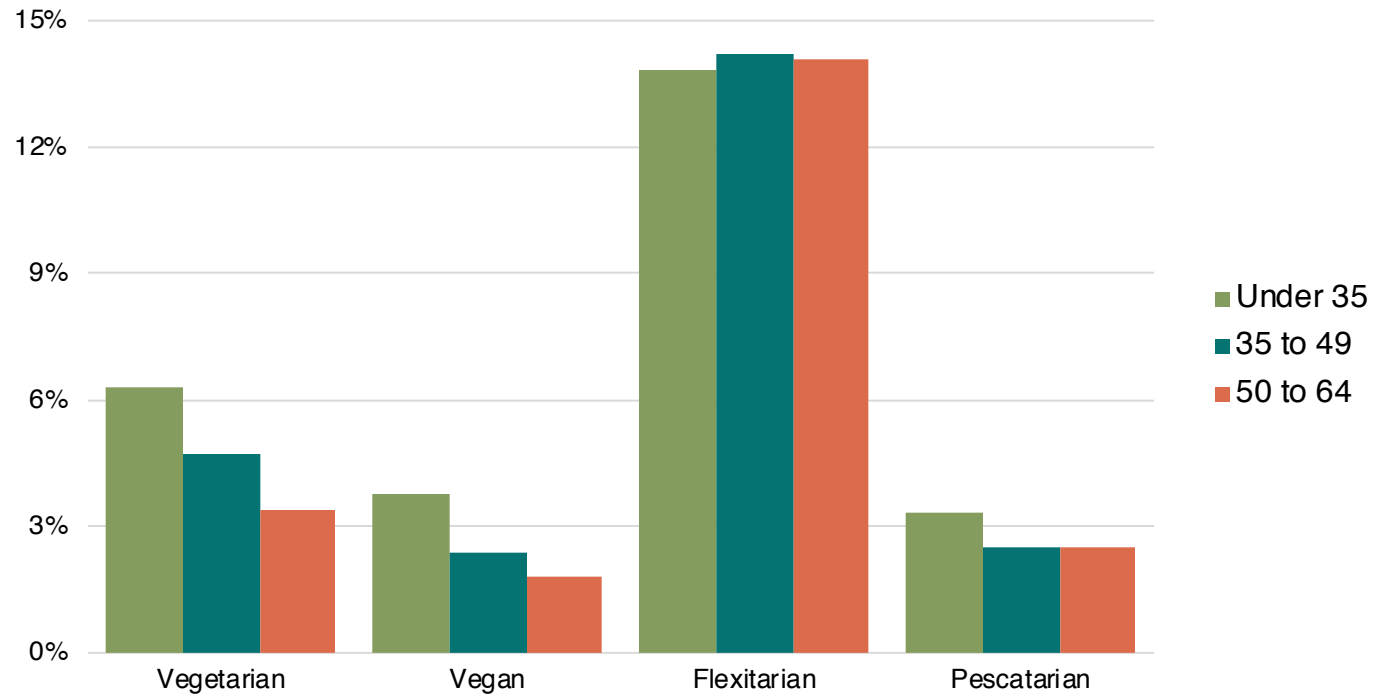
What traditionally has been a little bit on the fringes—plant-based diets, vegetarianism—is increasingly becoming visible because of social media. But all of these things—the confluence of attitudes and behaviors, what's happening [in terms of climate change] globally, the rise of millennial and Gen Z decisionmakers, the influence of venture capital—are really coming together to drive the rise of meat alternatives today.

**Oscar Yuan** president, IPSOS Strategy3

# The demographics of meat resistance

Different generations have different diets. People under 35 are twice as likely to be vegan as people 50 and older, and nearly twice as likely to be vegetarian. Attitudes about meat alternatives can also break down along generational lines. In the US, about one quarter of 18-34 year-olds say they are not interested in trying clean meat, versus 57% of adults 55 and older.

**Non-omnivorous diets by age**
Based on a 2018 IPSOS survey of 28 countries.



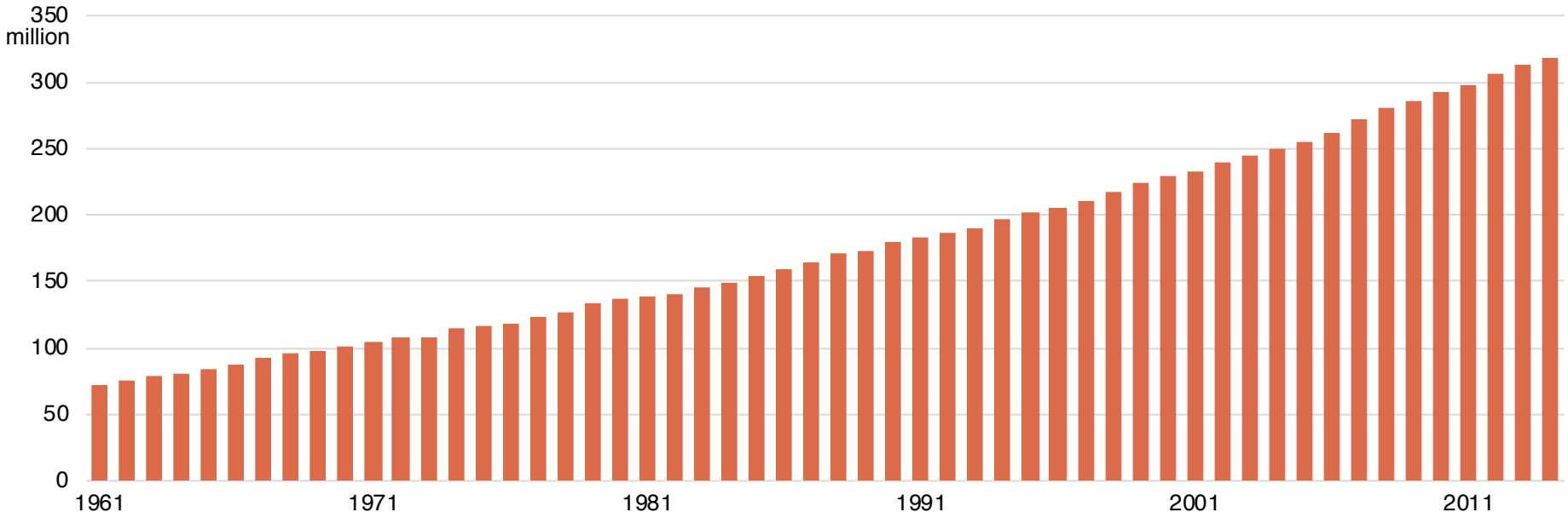
The youth feel far more pressure on their shoulders than perhaps some previous generations with regard to [social] responsibility. Partially, that's due to their exposure to news and what's going on in the world around them… I think the fact that news spreads more quickly does mean that people are reacting… There's a general wave of needing to be a more accountable, better person.

**Pippa Bailey** head of innovation, IPSOS MORI

## Can the global meat industry be disrupted?

Big Meat is a giant industry. It is projected to be worth $1.1 trillion by 2023. Even with the rapid rise of meat alternatives and changing consumer preferences, it is unlikely Big Meat will fall anytime soon. In fact, while the industry overall still sees meat-alternative companies as unwelcome competitors, some major meat producers show tentative interest in the alternatives market. Tyson Foods bought a 5% stake in Beyond Meats in 2016, but exited in 2019. Later the same year, Tyson released its own line of protein products: Raised and Rooted.

**Tonnes of livestock meat produced worldwide, 1961-2014**



## Roadblocks remain

As sophisticated as the meat alternatives industry has become in the last five years, some challenges remain.

- **Consumer buy-in.** The entire industry still has to grapple with public perception of their products. For plant-based products, taste and texture still stand in the way of consumer buy-in. Cultured meat faces uncertainty about its long-term impact on health and nutrition. Cultural issues surrounding meat—including halal and kosher guidelines—could also impact how consumers view meat alternatives.

- **Regulation.** Plant-based products have mostly surmounted regulatory barriers, but cultured meat faces a steeper climb. In some cases, it is even unclear which regulators should oversee cultured meat: Is it an agricultural industry, or a food industry?

For cultured meat, a few scientific hurdles also remain. To truly replicate conventional meat, scientists would need to be able to reproduce bones and full cuts of meat rather than just ground foods like chicken nuggets and burgers. Cell-cultured meat may be the future, but that future hasn't arrived just yet.

## Want to know more? Read Quartz coverage of meat alternatives.

- Why we don't yet know if cell-cultured meat will actually fight climate change – For background on why growing meat in labs might still come with environmental costs.
- Israel steps closer to winning the race to serve cultured meat – If you're curious about why and how Israel is a leader in meat alternatives.
- The leading US cell-based meat startups just forged an alliance – For more on the industry behind cultured meat.
- These are the homegrown startups Beyond Meat and Impossible Foods will face in China – For more on the global competition to corner the meat alternatives market.
- Congress' beef with plant-based companies using the word "meat" – If you want to understand the debate over what meat alternatives should be called.

**You'll also enjoy our member-exclusive field guide, The future of meat, and our Obsession on the future of food.**

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**Send us a note at members@qz.com.**