

Aquaculture | Mariculture

US Market Insights and Opportunities

March 2019

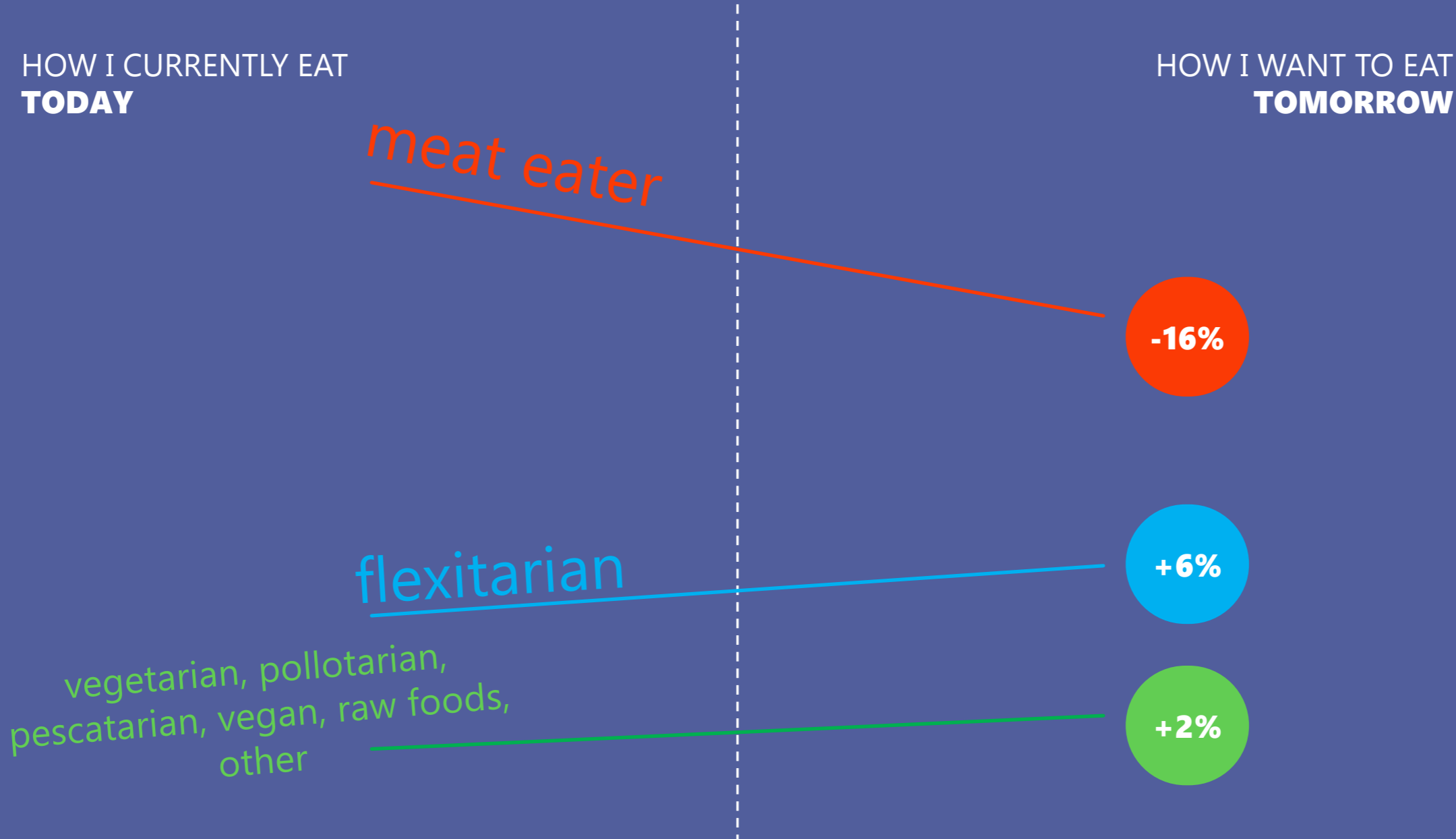


The United States, one of the world's most valuable market for seafood, is in the midst of a dramatic transformation in how it eats. A quarter of American adults want to eat less meat, and beef consumption is on trend to

decrease by 20% within a decade. The top choice for replacing it is fish and seafood.

However, consumption hasn't grown all that much at a time when so many Americans are in

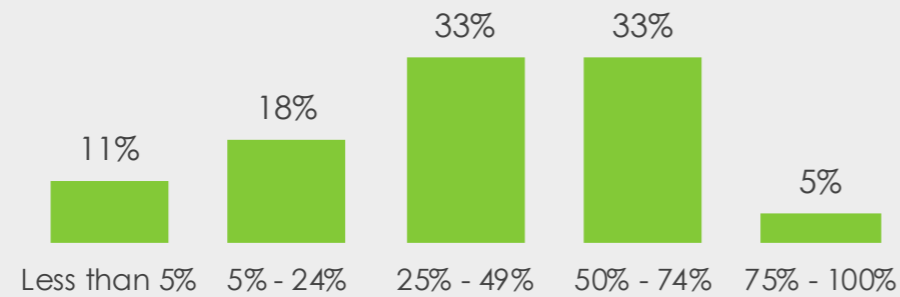
favor of eating more fish and seafood compared to other protein choices. That is because Americans also have some concerns about eating seafood that are preventing a more substantial increase.



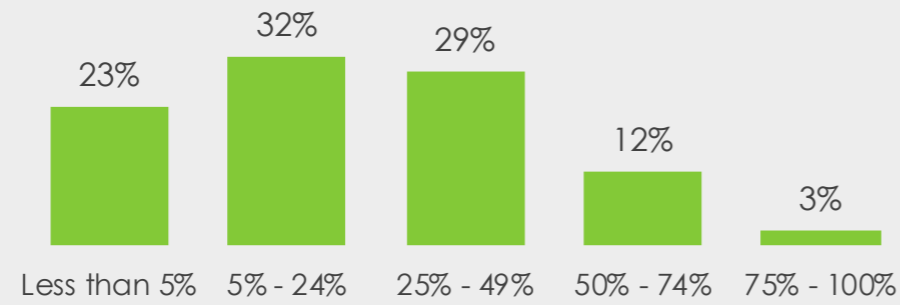
CONSUMER

n=1504

% fish eaten today that is farmed...



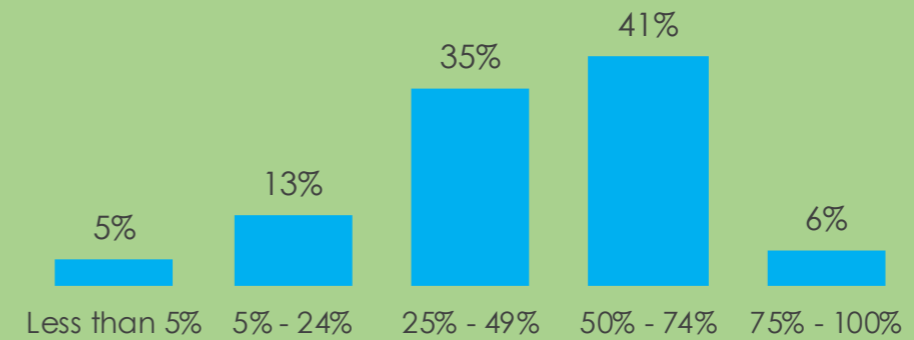
% fish farmed from deep ocean waters...



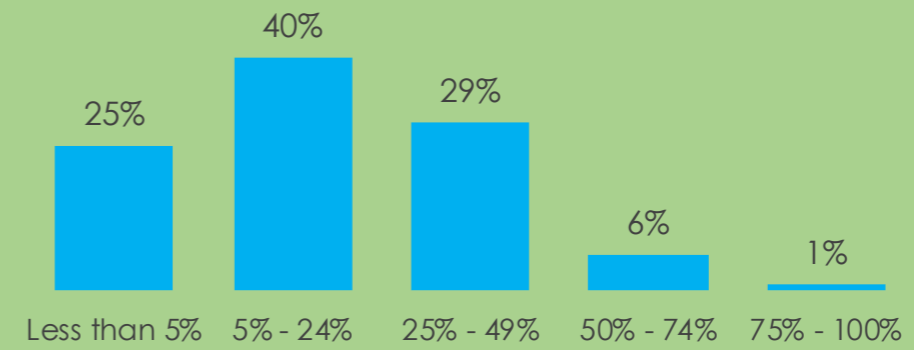
OPERATOR

n=402

% fish eaten today that is farmed...



% fish farmed from deep ocean waters...



Our research into the attitudes of U.S. consumers and operators – the business executives who make purchasing, menu and merchandising decisions about what to offer consumers – shows that new aquaculture technologies such as mariculture production out in the open ocean can play a key role in growing the U.S. market for fish and seafood. Also, while the

conventional wisdom is that Americans prefer wild fish and seafood, we scratched below the surface and found that is not entirely true.

Both consumers and operators underestimate the amount of farmed fish and seafood we already eat and also believe a substantial share is farmed out in the open ocean.

Over half of consumers and operators believe that aquaculture produces less than half the fish and seafood we eat, although operators believe more comes from aquaculture. Over a third believe that a substantial share is farmed in deep ocean waters away from the shore.

Both consumers and operators have concerns with current aquaculture practices. Water pollution and impacts on water quality are the top concerns that consumers have about aquaculture, followed by the use

of antibiotics and pesticides. Concerns are even higher among operators who make the decisions about what to offer consumers.

These concerns are pronounced whether production occurs on

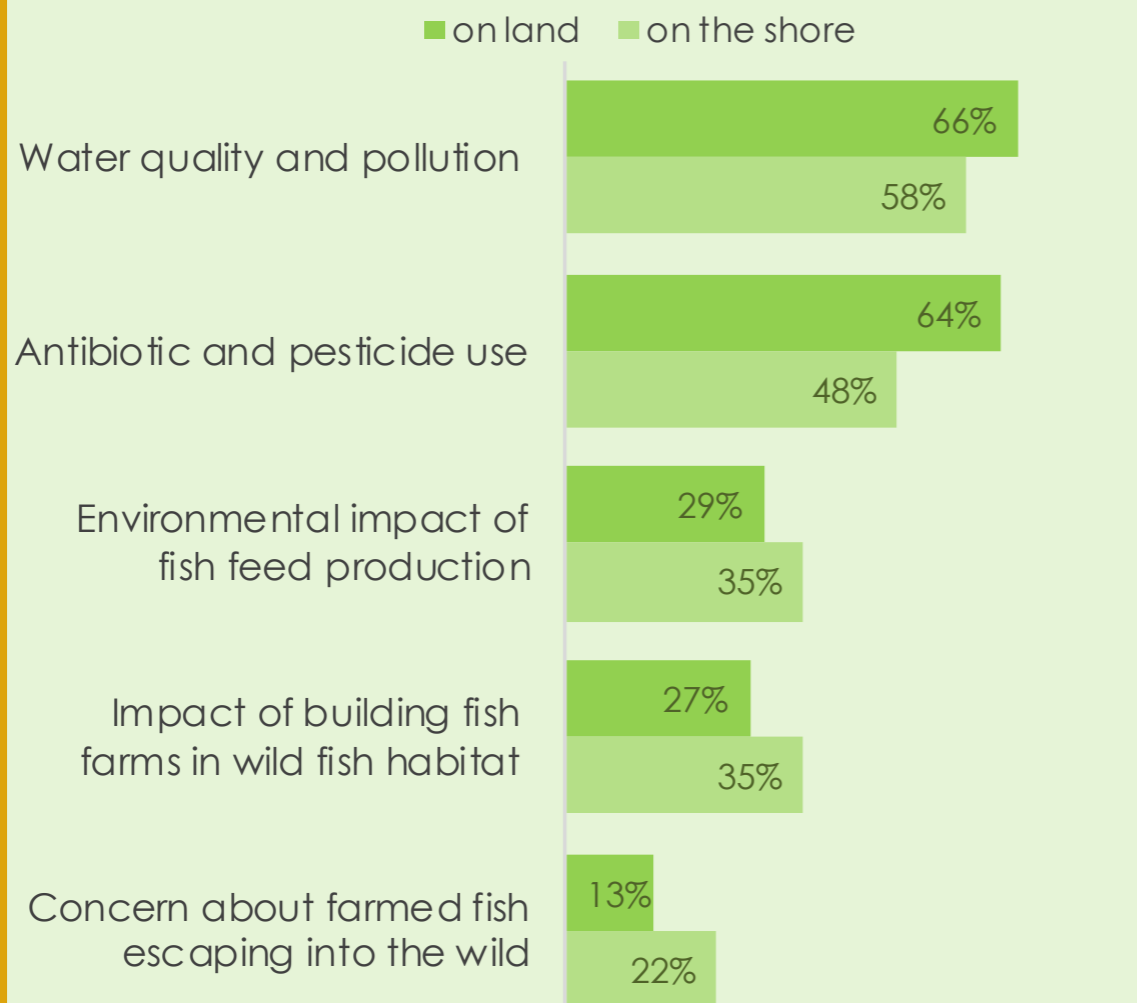
land or near the shore, although concern about antibiotic use is significantly higher for land-based aquaculture.

Overall, aquaculture operations located near the shore are seen as least preferable for the

TOP CONCERNS WITH FISH FARMING ON LAND/NEAR SHORE

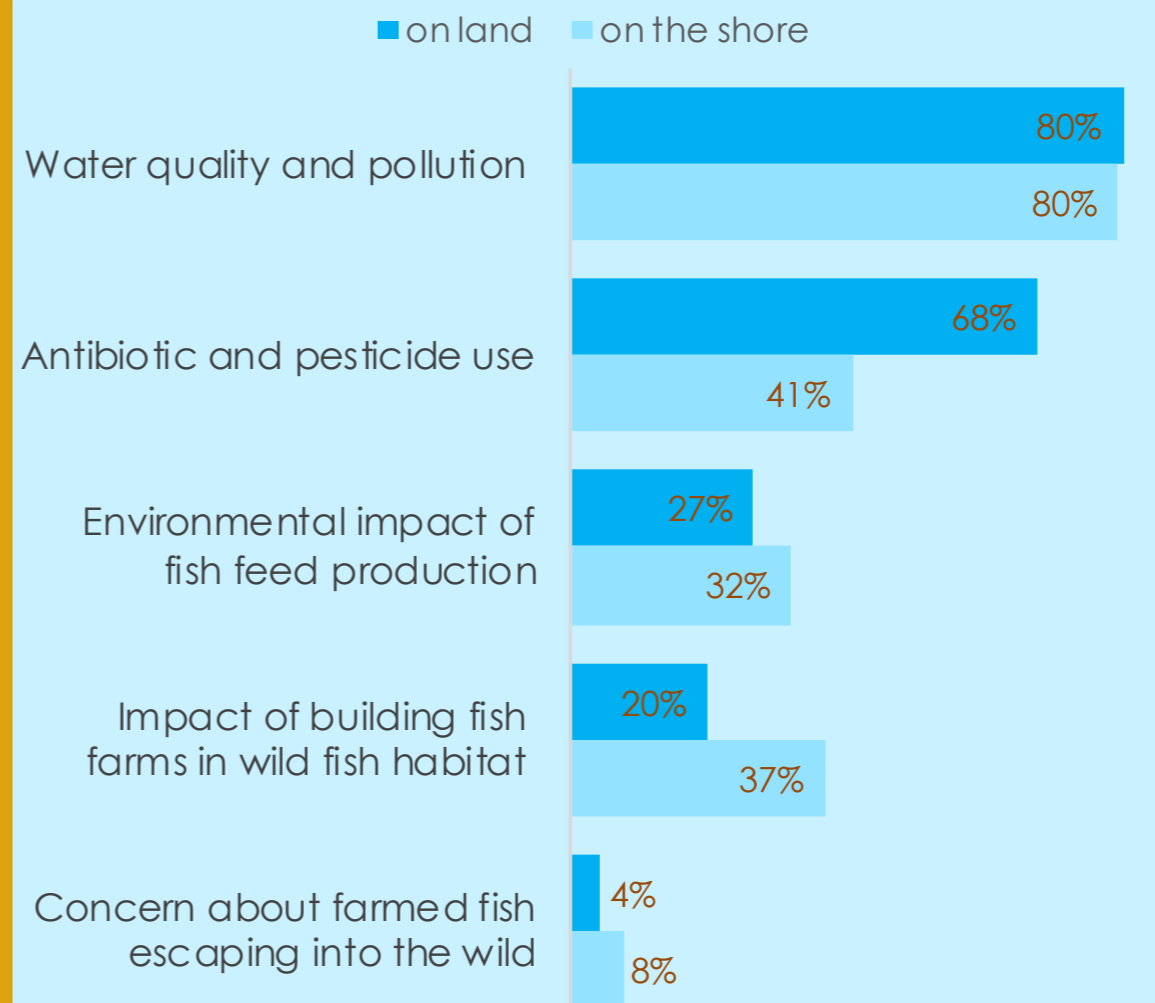
CONSUMER

n=662 | 349



OPERATOR

n=177 | 103



environment. Both consumers and operators also have higher trust in U.S. and Norwegian aquaculture operations, and believe that they produce higher

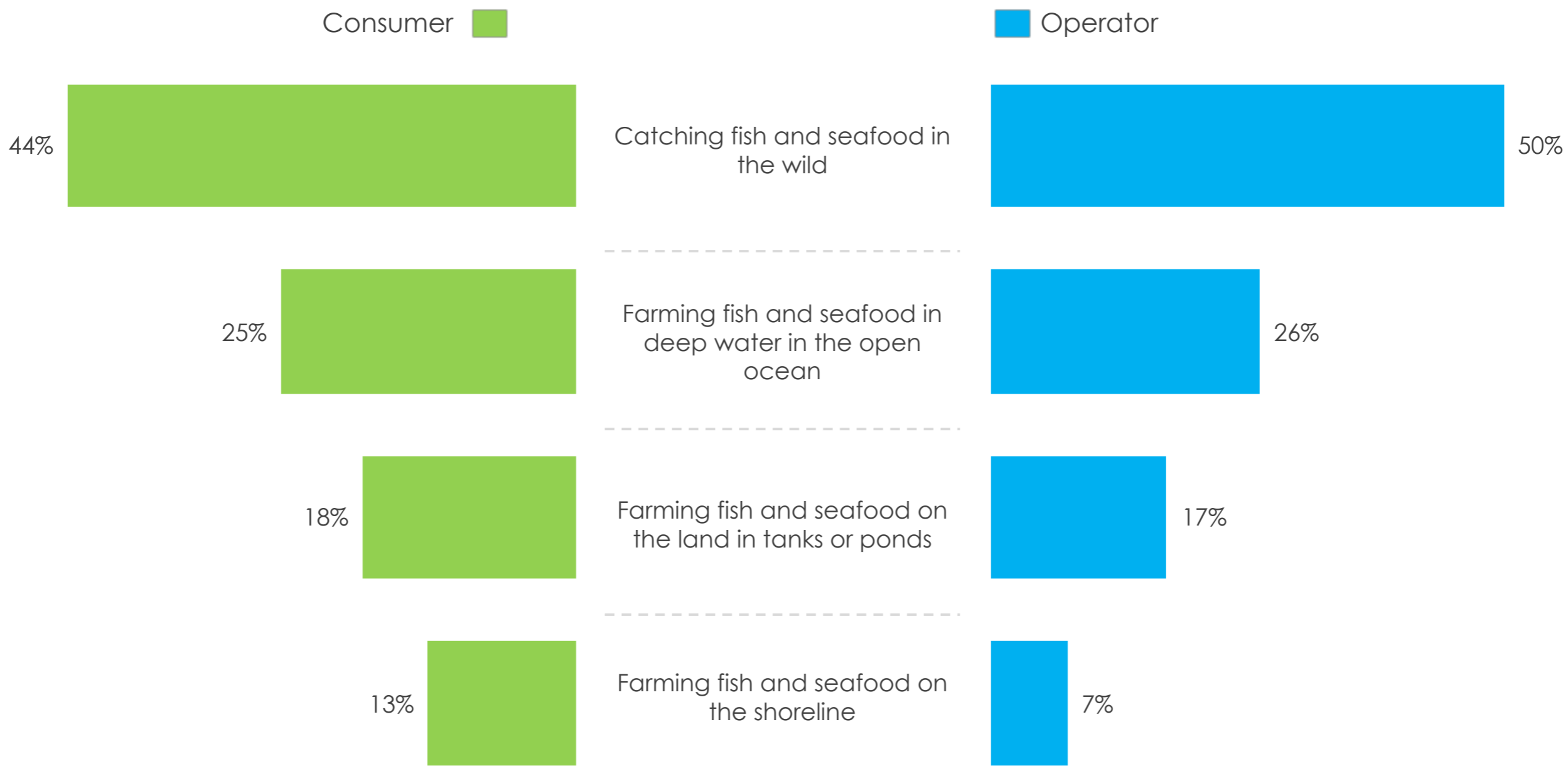
quality seafood and are better for the environment.

About half of consumers and operators believe that mariculture – farming fish out in the open

ocean – produces better quality products, is cleaner and free of antibiotics, pesticides and other chemicals, is better for the environment, has less impact on

PRACTICES BEST FOR THE ENVIRONMENT

% that ranked each practice #1; n=1508 | 404



wildlife and is more humane compared to other aquaculture methods. A quarter of consumers and operators believe mariculture is better for the environment than wild capture fishing.

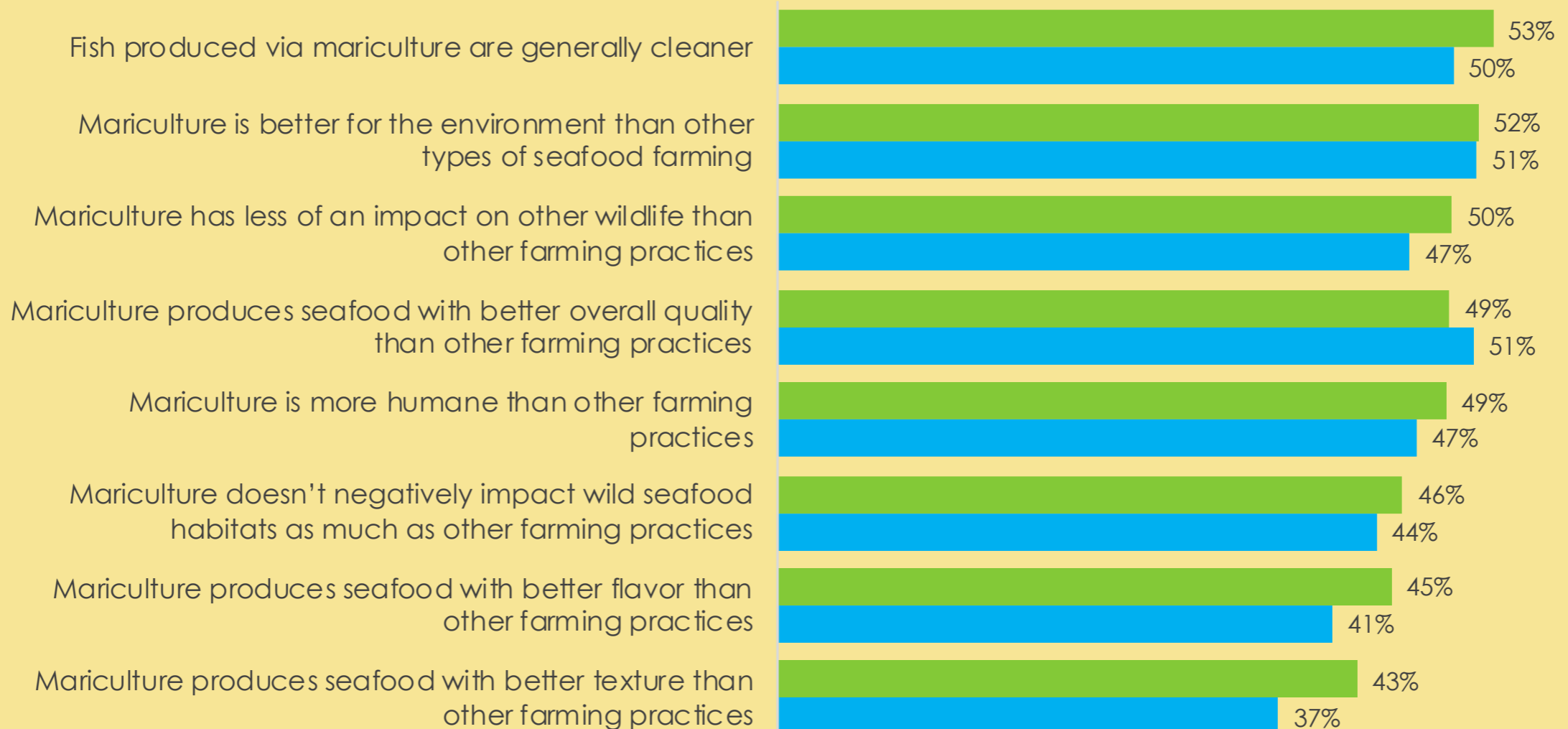
Mariculture is already accepted by both consumers and operators as superior even though it is new technology and not yet widely adopted. Many

believe mariculture operations are already supplying a meaningful share of our fish and seafood and have accepted this new technology.

This misperception is actually pre-acceptance of mariculture and indicates market recognition and support for new mariculture producers.

MARICULTURE

top 2 on a 5-point scale; n=1508 | 404





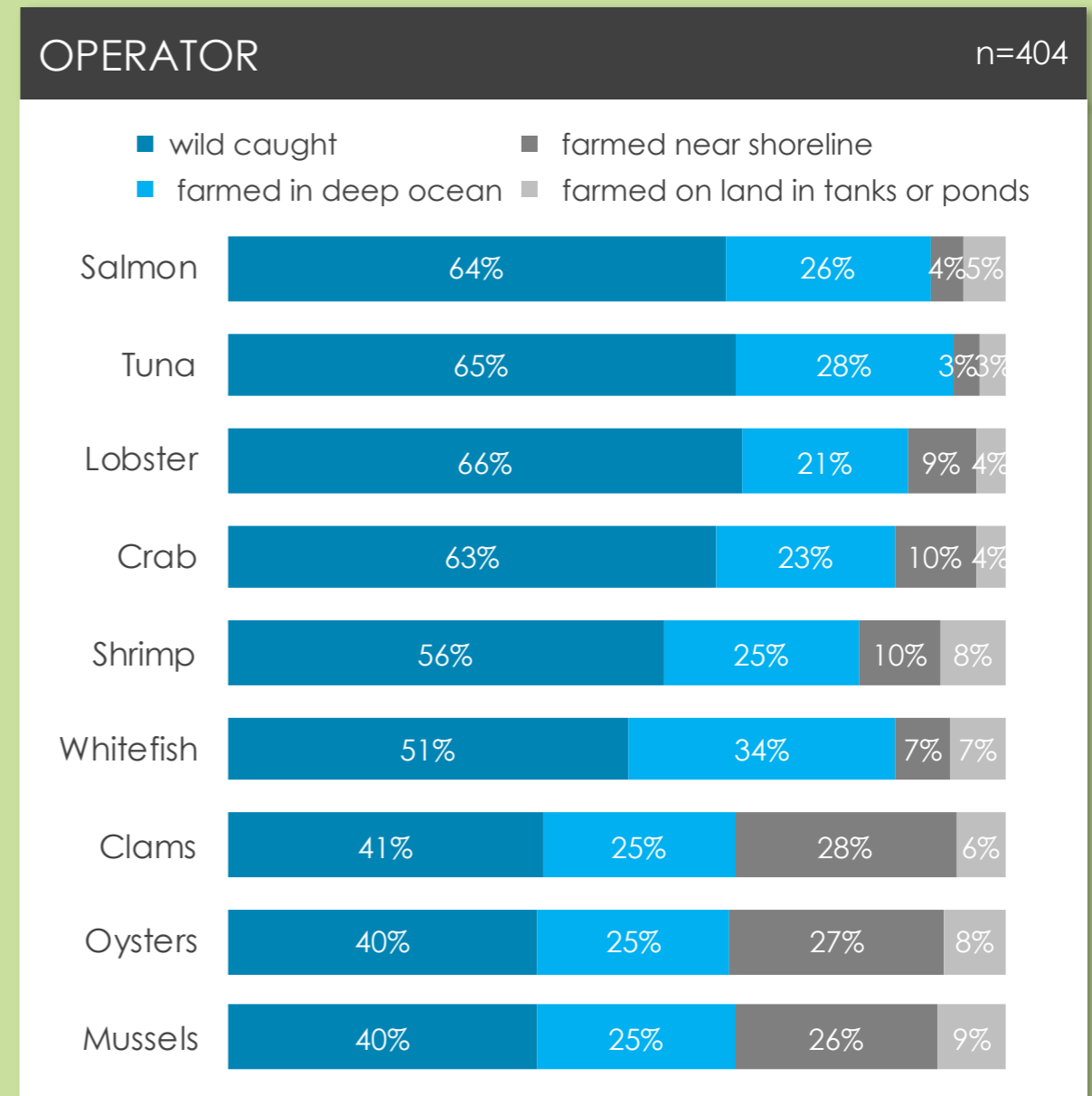
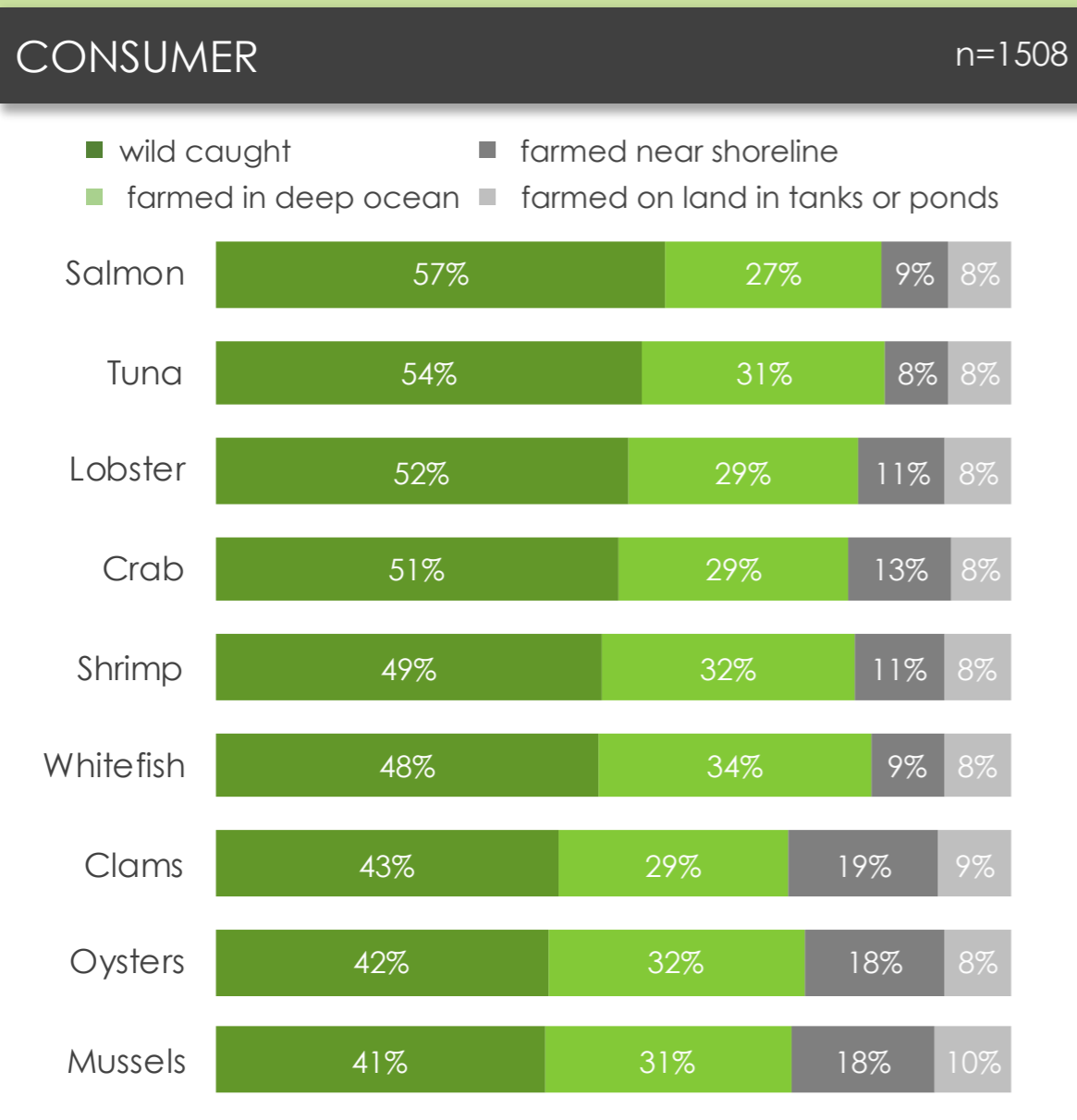
So, what about the fish and seafood itself? Again, the common belief is that Americans prefer wild fish and seafood.

On the surface, that's not wrong. When asked about general preference, almost half of U.S. consumers say and 40% of operators often state that they prefer fish and seafood to be wild, not farmed.

But, when we look a bit closer at individual types of fish and seafood, we find something very different. For many varieties, a larger share of consumers either have no preferences or prefer farmed fish and seafood.

Plus, as more Americans shift to eating more fish and seafood and less meat, the share of consumers with no established preference increases. Most operators also either have no preference, prefer farmed products, or do not yet purchase specific types of fish and seafood.

PREFERRED HARVEST PRACTICE



Both consumers and operators favor wild caught fish because they believe it has better flavor, quality, texture and is clean, or free of antibiotics, pesticides and other chemicals.

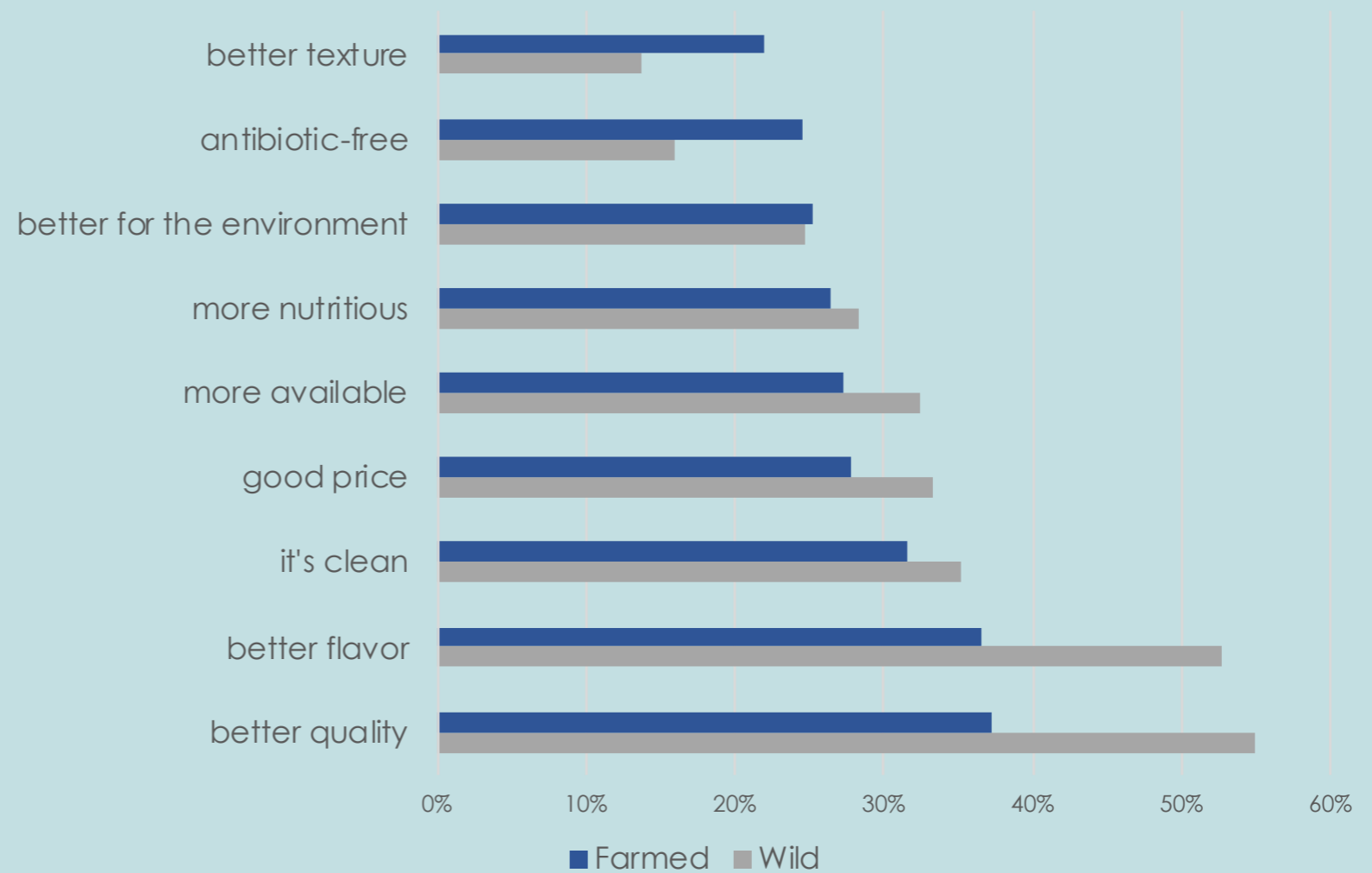
Consumers are also more likely to believe wild fish and seafood is more nutritious. For operators, price is the top reason they prefer farmed products. In all of these areas, aquaculture has the ability to compete and even offer a better product. This all points to aquaculture as both a competitive and attractive source of fish and seafood.

Consumers want to eat more fish and seafood. Despite common beliefs, they have yet to establish a preference and also are very receptive to farmed fish and seafood if their concerns are met.

Operators who decide what choices consumers have are equally open to aquaculture, sharing the same concerns about

WHY CONSUMERS PREFER FARMED OR WILD

Average of stated reason for salmon, whitefish, shrimp and crab among those with a preference



impacts on water quality and the use of antibiotics and pesticides.

Flavor, quality and cleanliness matter most in those decisions. Mariculture, along with other "clean" production methods can be a part of growing the market for fish and seafood in the United

States. And, while consumers and operators may underestimate the role of aquaculture in producing fish and seafood, a substantial number of them have already accepted mariculture and consider it to be an established and superior way to farm fish and seafood.

Changing Tastes

is a values-driven consultancy firm that provides business strategy and culinary consulting to Fortune 500 companies, growth stage restaurant and hospitality firms, investors, and the philanthropic sector. Through its work, the firm has created more than \$2B in value for its clients while catalyzing some of the most significant changes in the US food industry including reaccelerating growth in the natural and organic food industry by developing a new marketing strategy focused on personal health benefits, helping the leading US restaurant companies address antibiotic use in livestock production, and pioneering the now popular plant-forward dining strategy.

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