Direct-to-Consumer Strategies for Seafood

The Landscape, Challenges, and Opportunities since COVID-19

FUTURE of FISH

About Future of Fish
Future of Fish is an international non-profit that supports small-scale fisheries and communities impacted by overfishing to build sustainable livelihoods while also protecting fish, a critical source of protein for billions of people worldwide. www.futureoffish.org

© **Future of Fish 2022**

Disclaimer
The following report relied on a combination of literature reviews, in-depth expert interviews, and original data analyses. We thank Dr. Easton White for analyses of Global Fishing Watch data and Google Search Trends data and contributions to interpretations of this work. We validated our pattern-finding analyses using the literature and interview content as cross-references. Fishery systems are dynamic in nature, and subject to rapid and sudden change; the COVID-19 pandemic has only accelerated this volatility. We present this work as a synthesis of current conditions, acknowledging that research content spans several months in time. Future of Fish welcomes feedback to improve the findings.

Recommended Citation
Future of Fish. Direct-To-Consumer (D2C) Strategies for Seafood. January, 2022.

CONTENTS

Introduction

OVERVIEW

On January 30, 2020, the World Health Organization (WHO) declared the novel coronavirus a global health emergency. By March 11, WHO upgraded COVID-19 to a pandemic. Lockdowns began outside of China in early March and were widespread around the globe as the virus spread to nearly all countries by mid April.[1] Eighteen months later, outbreaks continue to impact global trade, labor markets, and health and well-being of millions of people around the world.

The economic, social, and environmental impacts of the pandemic on the seafood industry have been severe and diverse, including: disruptions to shipping and markets; high risk to fisher and seafood worker health and safety due to crowded conditions on board vessels and in processing facilities; increased food insecurity in coastal communities; and decreased fisheries science and enforcement and increased illegal fishing activities.[2]

A key response in the food industry, including seafood, was continued **expansion into direct sales gained tremendous momentum**. From initial coping responses consisting of dockside sales, seafood direct-to-consumer (D2C) business models continued to grow in sophistication and diversity. Today, **D2C models have been launched by every node in the seafood supply chain** and range from small companies servicing local markets to large e-commerce enterprises with national or even international reach.

This report categorizes the different types of D2C models that currently exist within the seafood sector, and evaluates their respective strengths and weaknesses, the enabling conditions important for certain models to thrive, as well as barriers to scale and growth. The goal is to provide insight into how these models may affect the way wild capture seafood is bought and sold around the world, and in particular, the impact this may have on social and environmentally responsible seafood initiatives.

APPROACH

Research was conducted from January 1, 2021 to October 15, 2021, and consisted of literature review and interviews with more than two dozen seafood actors and experts in the seafood industry involved with direct-to-consumer models around the world. The full resource list for media and articles is available upon request. Data was analyzed using a pattern-finding process which reveals trends and common themes, helping to reveal underlying strategies for success, dependencies, and challenges.

1.   Johns Hopkins University & Medicine. *"Coronavirus Resource Center."* Johns Hopkins Coronavirus Resource Center, Accessed 1 Nov. 2021.

2.   FAO. *Summary of the Impacts of the COVID-19 Pandemic on the Fisheries and Aquaculture Sector*. FAO, 2020. DOI.org (Crossref); Bennett, Nathan J., et al. *"The COVID-19 Pandemic, Small-Scale Fisheries and Coastal Fishing Communities."* Coastal Management, vol. 48, no. 4, July 2020, pp. 336–47. DOI.org (Crossref); Love, David C., et al. *"Emerging COVID-19 Impacts, Responses, and Lessons for Building Resilience in the Seafood System."* Global Food Security, vol. 28, Mar. 2021, p. 100494. DOI.org (Crossref)

The Direct-to-Consumer (D2C) Landscape

In the traditional retail landscape, manufacturers sell their products at wholesale prices to stores who then markup and sell the goods from physical stores at retail price. **In a direct-to-consumer model—known as D2C or DTC— a brand sells their product directly to their end customers without third-party wholesalers or retailers.** This means that D2C companies have control over every aspect of their brand and how it is presented, from marketing to pricing. By definition, in D2C models the manufacturer or "maker" is the one that connects with the customer.

While all of the D2C sector is relatively new compared to traditional retail channels, D2C for food and beverage is even more nascent—and particularly so for seafood. However, the seafood industry is rapidly evolving to take advantage of D2C models, fueled in part by the unique conditions brought about by COVID-19. And, unlike non-food sectors, seafood and produce offer an opportunity for producers of the raw materials— the fishers and farmers—to participate in the D2C boom directly. Food and beverage D2C is unique because the raw material can be the final product. This is different from, say, the cosmetics or clothing sector, where consumers have no use for pigments or cotton (the raw materials) that feed into the final product.

In the seafood industry, fishers can be the drivers of D2C; but so too can actors from other nodes in the supply chain. Processors and wholesalers, similar to cosmetics or clothing manufacturers, are creating new, value-add products based on inputs of raw material (catch) from fishers and selling these new goods directly to consumers. Both sales of raw product by fishers as well as value-added products from down the supply chain are considered D2C transactions, adding layers of complexity to the definition of D2C for seafood.

As is often the case with rapidly evolving sectors, different definitions of "official" D2C models exist. Narrow definitions require the business to be entirely online, with no other links to traditional retail sales channels. More broad definitions acknowledge that D2C companies may operate a diversity of sales and marketing channels and also recognize the growing trend of D2C companies moving from online-only to online plus offline models.[3] For the purpose of this report, we apply a broad definition of D2C:

A D2C seafood company is any enterprise that produces and directly sells a seafood product to the final consumer.

3   Prasannata Patwa. *"Why D2C Brands Are Eyeing the Offline Path after Tapping Online Channels."* YourStory.Com, 28 July 2021.

This definition includes companies using online sales as one of multiple sales strategies, and also includes offline efforts to sell directly to consumers through strategies such as pop-up shops or dockside sales.

D2C AND E-COMMERCE

Many of today's D2C brands are digitally native. They began online, and continue to rely on e-commerce rather than a brick-and-mortar store. Some companies, however, exist primarily online but occasionally host a pop-up.[4] And more and more, digitally native companies—those that were born and exist entirely online—are starting to turn to offline sales options as a way to boost connection with their customers. This online to offline (O2O) trend is just starting to gain traction, especially in China.[5] **For the majority of D2C companies across the globe, e-commerce is still the underlying driver of their business**, and they rely on different types of digital platforms for marketing and sales.

Adoption of different software platforms requires different degrees of expertise and resources. **New digital infrastructure is making it easier and less expensive to create and conduct more sophisticated online business**, all the time. Shopify is one of the most common e-commerce sites, allowing companies to easily launch an online D2C component of their brand. But software such as Squarespace and WordPress also allow for relatively low-lift customized websites, many of which have e-commerce capability and integrations with major electronic payment systems (such as Apple Pay, or PayPal) and logistics (UPS, FedEx) as well as integrations with social media platforms. Marketplaces such as Mercato in the USA or WiFetch in the Caribbean, are providing online shop fronts that increase access to small-scale producers and businesses looking to sell their products. Increasingly, **social media is becoming a common pathway for trade**, through channels such as Facebook Shop and Facebook Marketplace.[6] There are now even platforms to help businesses leverage the recent phenomena of "live selling," such as CommentSold.[7]

Many of the new developments in the e-commerce space fall within the category of D2C or e-commerce "support" products and services. Companies providing these ancillary functions have made it possible for small and medium enterprises (SMEs) to compete—and served as critical lifelines for companies of all sizes when COVID-19 struck. The emergence of businesses that focus on providing these support services specifically for *seafood* is one of the major indications that D2C models in seafood are likely to continue to stick around (Figure 1).

What may have been an initial coping mechanism for food system actors has quickly evolved to become a fundamental part of how food is traded around the globe—including in seafood.

"E-commerce is growing and evolving rapidly. Consumer behaviors and shopping habits have been changed forever by COVID-19, and we are living now in the future of retail." –
Edge by Ascential CEO Deren Baker[8]

4   Erin Hynes. *"D2C Brands Are a Prime Target for Gen Z's $143 Billion of Buying Power."* Diff, 21 July 2020.

5   Norwegian Seafood Council. *What Trends Will Affect Seafood and the Norwegian Seafood Industry in the Years to Come?* 2021.

6   Agatha Aviso. *"How to Sell on Facebook Shops & Facebook Marketplace in 2022."* Fit Small Business, 18 Oct. 2021.

7   *"CommentSold - Live Selling Is the Most Engaging Way to Sell Online."* CommentSold, Accessed 1 Nov. 2021.

8   Russell Redman. *"DoorDash, Uber Eats, Instacart Challenge Major e-Commerce Retailers."* Supermarket News, 4 June 2021.

Direct-to-Consumer (D2C) Models for Seafood

An increasing number of actors throughout the seafood supply chain are leveraging D2C approaches to grow or stabilize their businesses in the wake of COVID-19 impacts. Across the sector, we find companies that launched D2C models over a decade ago expanding and refining their existing approaches. At the other end of the spectrum are businesses who have only come online as recently as early 2021. The diversity and complexity of these approaches reflects the diversity of fisheries production and consumption contexts around the world. Our analysis has distilled this wide range of D2C seafood models into four high-level categories:

1. **Grassroots**: hyperlocal, minimally processed catch of the day product, mostly driven by fishers, supported by social media and/or digital marketplace technologies.

2. **Membership**: subscription-based models that range from hyperlocal to national reach, emphasize connection with fisher and exposure to new and different seafood products. Operated by fisher groups or an intermediary and supported by online ordering options.

3. **Fishmonger 2.0**: businesses with small, physical locations for consumers to purchase seafood in a variety of formats, normally operated by an intermediary and supported by online ordering and home delivery options.

4. **Brand Direct**: Companies—often processors or distributors—with their own websites for online shopping. Most often sourcing from a variety of producers across local and national scales and partnering with third party logistics providers to support home delivery. Often leverage online marketplaces for increased exposure.
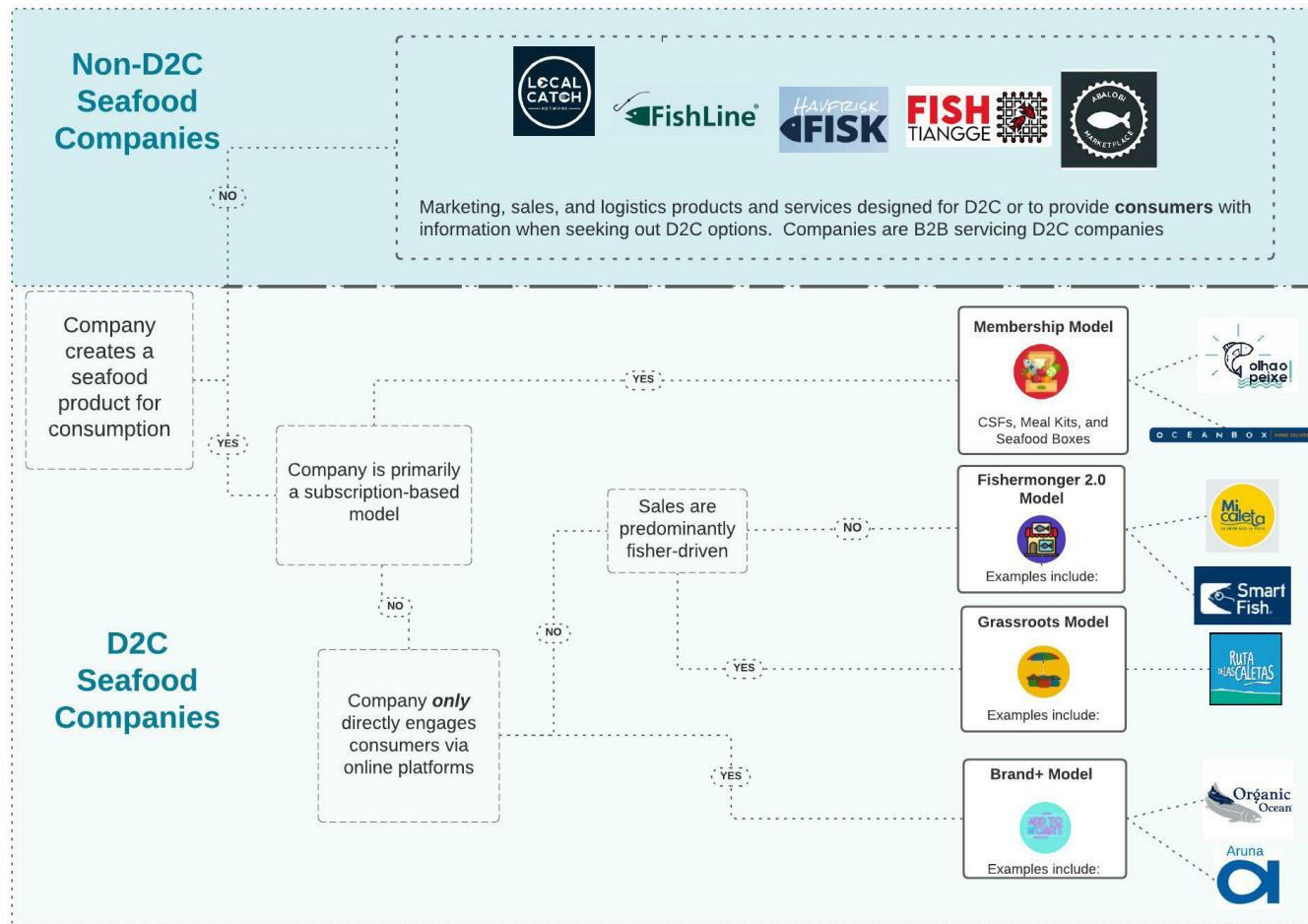
Figure 1. Classification of different D2C models in seafood. Categorization is based on major features of D2C models, including what products are offered, how consumers are engaged, and the method of product delivery. Companies providing support services to D2C are shown in the upper box. D2C companies fall into four high-level business model categories that we are calling: Membership, Fishmonger 2.0, Grassroots, and Brand+. Examples of existing businesses for each model category are from top to bottom: Olha o Peixe (CSF in Brazil); OceanBox (Seafood Box, USA); MiCaleta (Distributor, Chile); SmartFish (Distributor, Mexico); Rutas De Caleta (Chile); Organic Ocean (Distributor, Canada); Seafood By Aruna (Distributor, Indonesia). For more details on each category, see Direct-To-Consumer (D2C) Models in Seafood section.

These four categories are not exclusive, nor are they rigid. Within each category, there are multiple types of business models; additionally, many companies run a number of sales strategies simultaneously and may occupy more than one category. What differentiates these models are the primary ways in which businesses engage the consumer, impacting the type of technology utilized and geographic reach of the model.

GRASSROOTS MODELS

Description: Fishers sell their catch directly to consumers in minimally processed form. Dockside and door-to-door sales are traditional methods of selling catch that many fishing communities continue the practice today around the world and during lockdowns, this method became a lifeline for fishers who saw their sales channels[9] and for rural fishing communities that were cut off from contact with the outside world. In many regions, this model is actively evolving to include a growing reliance on digital platforms. These platforms may simply serve as match-making services, or can also support sales transactions and logistics. Unlike other models, the digital tools used in the Grassroots scenario focus on supporting transactions between fishers and consumers within their own or nearby communities.

**Delivery Method:** There are three main delivery methods used in this model:

1. Consumers travel to meet the fisher at the dock or roadside (non-permanent) locations (this model can also include small-scale fish vendors—often women or relatives of fishers—selling dried or smoked products at landing or roadside sites);
2. The fisher goes door-to-door to sell their catch;
3. A third party delivers the product, based on a transaction placed between fisher and consumer.

Types of product: Local catch of the day, consisting of fresh finfish or shellfish; smoked fish; dried fish. Minimal processing such as cleaning and filleting is sometimes provided.

Consumer geographic reach: Hyperlocal—consumers are often community residents. The exception is tourists that come to the fishing community from out of town and purchase dockside.

Where we see these models: Versions of grassroots D2C exist all over the world, but are especially important in low and middle income countries (LMICs) in Latin America, Asia, and Africa. However, introduction of online marketplaces and match-making apps that help alleviate some of the marketing and sales burden on fishers has recently made this a more attractive method for fishers in the USA and EU, many of whom use this model as one of multiple sales channels.

Typical Number of Supply Chain Nodes:
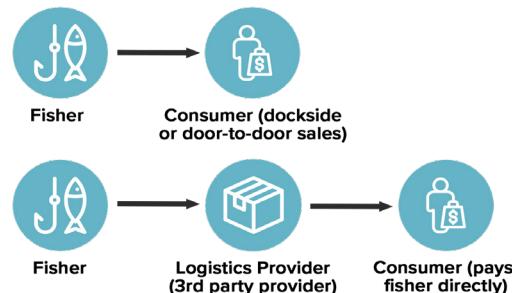
Commonly used technologies:

- Social media platforms, especially Facebook and Instagram, to highlight catch of the day and attract customers
- WhatsApp or WhatsApp business for communications and to support transactions.
- Digital payment systems, such as Venmo, PayPal, PayMe and izipay,[10] in addition to cash.

Digital platforms and apps that help connect fishers with consumers such as Fish Tiangge, and Abalobi Marketplace

Maps that help consumers find sources for local fish, such as HavFriskFisk and FishLine, those by

9   Stoll, Joshua S., et al. *"Alternative Seafood Networks during COVID-19: Implications for Resilience and Sustainability."* Frontiers in Sustainable Food Systems, Mar. 2021.

10   Franco Bravo Tejeda. *"Las 10 Pasarelas de Pago más utilizadas en Perú [Comparadas]."* Ecommerce News, 7 Dec. 2020.

several New England state governments, and the Discover Seafood interactive map in the UK.[11]

Strengths: Grassroots models are all relatively low-cost, and require little infrastructure or up-front investment. These models offer local catch that is fresh (just landed that day), with no or limited added cost for delivery. Additionally, they offer the opportunity for the consumer to connect directly with the fisher, often in-person. While versions of this model have been utilized for centuries, today's varieties are increasingly reliant on digital platforms. This both reinforces the relationship between fisher and consumer, while also supporting improved communication and planning for both parties—digital marketplaces and match-making apps help fishers advertise their catch while also giving consumers the opportunity to make requests.

Most Grassroots models provide consumers with the opportunity to view products before buying them. In places where dockside sales are popular, consumers also benefit from having multiple options in the same place from where to purchase their products. For locals and out-of-town visitors, the opportunity to buy fish in a way that feels "authentic" helps to build up the reputation and value of fisheries at home and across a country.

Door-to-door sales offer the convenience of home delivery with the benefits of getting to know your fisher first-hand. Roadside sales can also offer an element of convenience, with quick transactions that are often low or no-contact, which continues to be a benefit to many consumers during the pandemic. Fishers that rely on marketplaces with logistics support are also able to provide the convenience of at-home delivery while reaching a larger range of customers.

Because these models rely on local fisheries and hyperlocal markets, they may be more resilient to impacts of large-scale global shocks. Keeping at least some of their catch flowing through to their neighbors can help fishers not only support food security needs and reinforce the value of small-scale fisheries within the community, but also build a social network that can provide critical support to fishers and their communities during times of

crisis.[12]

Weaknesses: This category of D2C is limited by the volume and geographic range over which the models can operate: small-scale. Fishers with large boats and higher-volume catch need support with processing and cold storage in order to effectively and safely move their product; it is difficult for them to reach enough individual consumers to sell significant volumes.

Fishers also may not catch *enough* to meet consumer demand. Conversely, there may be plenty of local catch available, but it does not fit the preferences and price points of domestic consumers.[13] Building local demand for new species is possible, but tends to be more effectively done through the Membership models, which have greater capacity to educate consumers about diverse species.

As a fisher-led model, this approach also adds the burden of marketing and sales activities onto fishers' already full plates. After a long day of fishing, many fishers just want to be able to land their catch and go home. The exhaustion of D2C sales is one of the reasons many fishers gave up on these models once lockdowns were lifted.

Finally, this model depends on regulations allowing fishers to not only catch, but also sell their fish. Dealer or sales licenses are not the same as fishing licenses in most countries, and can create an additional bureaucratic hurdle that fishers must overcome.

A Deeper Dive into Grassroots D2C:

The Facebook page of Fish Tiangge is alive with posts from Filipino fishers advertising their products: species, sizes, prices, and how to get in touch. Part of USAID's Fish Right program, the platform helps consumers connect with fishers based on the information they provide in their post, and then third party pedicab drivers deliver the fish. Transactions are done offline, directly between fishers and consumers. With nearly 1200 followers since the site launched in April 2020, the reach of fishers advertising on Fish Tiangge is

11   *"Find Local Seafood Retailers near You."* Discover Seafood, Accessed 1 Nov. 2021.

12   Stoll, Joshua S., et al. *"Alternative Seafood Networks during COVID-19: Implications for Resilience and Sustainability."* Frontiers in Sustainable Food Systems, Mar. 2021.

13   Apps that show consumers what is available and how much is available, such as FishLine, are one way that technology is helping overcome some of these barriers to D2C progress in seafood.

significant—an estimated 6000 fishers connected to 300,000 households. In addition, screening of products by partner universities helps ensure that only responsible fishers catching legal fish are benefitting from this marketing exposure.[14]

14   *United States and Philippines Partner to Support Fisherfolk During COVID-19* Press Release | Philippines | U.S. Agency for International Development. 12 May 2020.
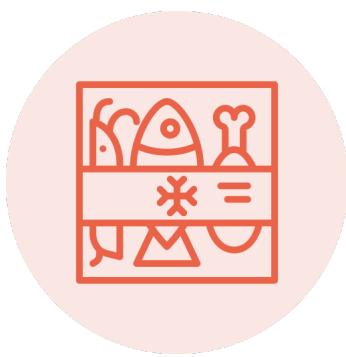
MEMBERSHIP MODELS

Description: Versions of this category include Community Supported Fisheries (CSFs), seafood boxes, and meal kits. These models share several features:

1. A focus on long-term relationship building that centers around connecting consumers with fishers, place, and food;

2. A commitment to education and expanding the seafood palette of consumers;

3. Subscription-based sales as a driving component of the financial model (though one-time purchasing options are common). The distinction here is the focus on subscription (compared with Brand+ models that are focused on single orders but may have the occasional or limited subscription option— see below)

4. Customer convenience is key, as products can be received through recurring shipments, at-home delivery, or nearby pick-up locations.

Where these models differ is in regard to the type of fisheries they engage, degree of customization by consumers, and proximity to the source of the seafood.

Community Supported Fishers (CSFs)

CSFs offer the closest connection to fishers, where coastal residents can sign up to receive shares of a season's catch and purchase seafood *usually* caught from small-scale fisheries near their home shores. A diverse space within itself,

experts have identified three different types of CSFs:[15]

- *Harvester-Focused*: producer-owned, this model connects consumers directly to the fisher and aims to support local economies. Consumers pay up-front for a "share" of whatever is caught, with little control over the final products they receive.

- *Consumer-focused*: these approaches provide more choice to the consumer, allowing them to select products that suit their needs. They tend to source from a larger diversity of producers, and pass along story and information to improve relationships and encourage engagement with local seafood producers.

- *Specialty-focused*: this model focuses on high-quality, premium, and niche seafood products, often with seasonal availability. These products tend to reach a broader consumer audience than other CSF models, frequently providing options for rapid national shipping. Sitka Salmon Shares, providing wild-caught, Alaskan seafood, is one example.

While the vast majority of CSFs operate using subscriptions, some allow consumers an option for one-time purchases of select products.

The Seafood Box

In contrast to CSFs, the seafood box model allows consumers far more control over their product selection. Depending on the company and focus, consumers may choose from a wide variety of species, or a narrow selection of niche products, such as different types of Alaskan wild-caught white fish.[16] Seafood box models connect the consumer with the company creating the boxes—not necessarily the fisher. However, these intermediaries often provide consumers with increased transparency and storied seafood from their seafood suppliers.

15   Bolton, Alexis E., et al. *"Describing the Diversity of Community Supported Fishery Programs in North America."* Marine Policy, vol. 66, Apr. 2016, pp. 21–29. ScienceDirect

16   Wild Alaskan Inc. *"Wild Alaskan Company | Wild-Caught Sustainable Alaskan Seafood."* Wild Alaskan Company, Accessed 1 Nov. 2021.

Meal Kits

Meal kits are focused on providing their customers with everything needed to create a full meal. Under these models, consumers are able to customize their orders, which may be as frequent as 3 or more meals a week, and receive detailed recipes and pre-cut, pre-chopped, and pre-measured portions of *all* ingredients, not just the seafood. Often, each delivery consists of ingredients for multiple meals.

Delivery Method:

- CSFs traditionally rely on local pick-up locations but may also offer home delivery

- Seafood boxes: at-home delivery via third party logistics

- Meal kits: at-home delivery via third party logistics

Types of product: The majority of CSFs offer fresh products; seafood boxes and meal kits tend to provide frozen, due to the larger shipping distances. Meal kits can range from seafood-only (Hello Fresh, Blue Apron, SunBasket, and Green Chef all have "Pescatarian" meal plans) to plans that offer seafood as one of many protein options. Seafood boxes provide a variety of seafood, usually in prepared portions, often frozen and ready-to-cook. Because seafood box and meal kit companies are aggregating seafood, they are able to source from larger-scale fisheries.

Consumer geographic reach: From hyperlocal to national reach. The majority of CSFs have local pick-up locations and many also participate in farmers markets; since COVID-19, many have turned to online-driven D2C with home delivery. Meal kits and seafood boxes tend to be regional or national scale, relying on third-party logistics providers to deliver the product.

Where we see these models: CSFs continue to grow rapidly in the USA and Canada. But CSFs can also be found all over the world, including in Brazil, Turkey, Australia, and the UK. Seafood boxes are also gaining popularity on a global scale, with many intermediaries offering this model as a way to connect directly with the consumer and provide a diverse yet customizable selections. Proliferation of subscription seafood

boxes in the US and UK have even sparked "Top-10" lists with opinions on "the best" seafood boxes to help consumers navigate all the options.[17] Meal kits appear to be more limited to the US market for now, though similar services are being offered in the EU and Chile by restaurants. In these cases, chefs are creating boxes that consumers can pick up, or that food service delivery can drop off at home. These boxes contain all the ingredients, prepped, for making one of the restaurant's popular seafood dishes.

Average Number of Supply Chain Nodes:

Fisher (that runs a CSF) → **Consumer**

Fisher → **Intermediary (that may be a CSF)** → **Consumer**
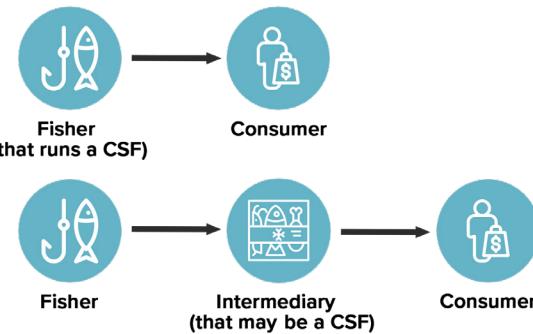
Commonly used tech:

- Social media for building community and creating strong customer support, with storytelling as a key resource.

- WhatsApp or WhatsApp business for communications and to support transactions.

- Digital marketplaces that list CSFs and provide contact information or facilitate sales and delivery.

- Online websites with e-commerce capabilities and integration with sophisticated client management software.

- Online maps that help consumers find and contact CSFs

Strengths: The core strength of the membership models is the payment scheme, which provides upfront or recurring payments that help businesses to stabilize their cash flows. Small scale fishers in particular have to front the significant costs of a fishing trip without knowing how much or even

17   Joanne Gould. *"8 Best Fish and Seafood Boxes for Delicious Shore to Door Deliveries."* The Independent, 14 Aug. 2020; Adam Bryan. *"10 Best Seafood Subscription Boxes (2021)."* Urban Tastebud, 22 Feb. 2021.

what they will catch before leaving the dock. CSF models help to alleviate this pain point.

For all Membership models, the emphasis on a subscription-based engagement facilitates business planning. In order to secure customers and have them buyin to repeat purchases, business owners heavily invest in building relationships with customers. As COVID-19 revealed, during times of need, these networks helped fishers stay afloat while also ensuring healthy food remained available for communities. For seafood boxes and meal kits, companies were able to provide safe, contactless food delivery services for clients stuck at home.

Another major benefit of these models from the consumer side is their safety and convenience. The ability to pick up fresh, local catch from a CSF on a regular schedule, or receive recurring orders at home, is something more and more consumers are expecting from their shopping experience. Together, the perceived safety and convenience of these models is driving continued growth that is unlikely to falter, even as COVID-19-associated restrictions ease.[18]

"For those who use meal kit delivery services, the top reasons for doing so are convenience, liking having meals planned for them, and trying something new/changing diet. A large number of meal kit users also report they use meal kits because these products save them time on meal prep." [19]

Flexibility is also a hallmark of the Membership models in several ways. First, although consumers buy into shares or subscriptions, there are nearly always options to customize, change, and alter the plans as needed. Second, meal kits and seafood boxes can support the volumes of both small scale fisheries and larger industrial fisheries, depending on the company's approach. Third, the product types and forms can be wide-ranging, with a large segment of Membership Model consumers expecting to be introduced to new items.

The opportunity to expand the consumer's seafood palette by introducing new species, recipes, and cooking guidelines in addition to old favorites is another strength. In countries such as the USA, where seafood demand is limited to a handful of commodity products, this exposure to new offerings by trusted partners is a promising trend that could support the sustainable seafood movement.

In addition to diversity, Membership Models are also pushing sustainability as a brand differentiator. A large number of seafood box companies and CSFs market themselves as having the best social and environmental practices, with benefits for oceans and communities. Today, meal kit and seafood box companies are competing on more than just price and quality—diversity of offerings, transparency around sourcing, and alignment with eco-friendly and community-first values are becoming important features of these brands, and can help increase demand for sustainable and socially responsible products.

Finally, most companies within the Membership Model tend to source domestic products—certainly for CSFs and even for many seafood boxes, which are differentiating themselves based on values of local, sustainable, and traceable, in addition to high-quality. Not having to rely on imports means these models are more resilient to major global disruptions.

"Wild Alaskan Seafood supply chain- we don't rely on foreign imports. Entire supply chain, from packaging, to insulation (biodegradable US corn). So while other companies reliant on imports were disrupted, we had an abundance of Alaskan seafood." Aaron Kallenberg, Founder and CEO of Wild Alaskan Company[20]

Weaknesses

Price point: Cost is a major hurdle for the Membership Models. Despite shorter supply chains, products sold through CSFs, meal kits, and seafood boxes are relatively expensive. For CSFs, many consumers—especially those facing job loss due to COVID-19—are not in a position to purchase shares of the full seasons catch up

18   Precision Reports. *Global Meal Kit Delivery Services Market – Industry Reports*. Precision Reports, 6 Sept. 2021.

19   Packaged Facts. *"Packaged Facts Analyst Comments on Home Chef Hitting the $1B Mark as the Meal Kit Industry Continues to Benefit from Pandemic Eating Trends."* Perishable News, 27 Oct. 2021.

20   Seafood Source. *Seafood Expo North America Reconnect*.

front; even "pay-as-you-go" options can be price prohibitive.

For meal kits and seafood boxes, prices are higher than similar ready-to-go and ready-to-cook meals found in retail—mostly due to the cost of home delivery. These retail options also have the added benefit of being available on demand. Overall, growing competition from retail is a significant threat to the Membership Models as more retailers shift to ready-to-cook and individually portioned products.

"While many consumers think that meal kits are too expensive or that a subscription model is inconvenient, opportunities exist to address these customers' needs via versions that are increasingly available at grocery stores. Kroger's sales of Home Chef kits in their stores is just one such example. In-store versions are typically less expensive per serving than meal kits sold via delivery services. Plus, they can be purchased on an as-needed basis instead of being planned in advance."—Cara Rasch, analyst for Packaged Facts.[21]

These models also depend on reliable physical access to consumers—either by third party logistics or physical presence within communities. Poor roads and lack of working waterfront facilities can limit the locations where CSFs can both land product and welcome consumers. For the majority of inland customers, local pick-up locations are not convenient.

For meal kits and seafood box companies, reliable logistics partners are key—especially for that last mile delivery. This can significantly limit the viability of these approaches where partners or infrastructure makes fast and secure deliveries a challenge.

Deeper Dive into Membership Models

Still deeply place-based, CSFs are increasingly working to expand their reach. This trend is in part a response to COVID-19, but also to the e-commerce movement in general. Through the use of online shopfronts and improved logistics, these local models are able to expand their network beyond the coastal towns where fishers are based.

Real Good Fish based out of Moss Landing, CA, is one example. Recognizing the growing opportunity for home delivery, they began selling online just before the COVID-19 pandemic hit. Bolstered by the ensuing demand, they have since expanded nation-wide—sourcing from over 75 fishers and partnering with third party logistics providers to scale. Besides leveraging an online ordering platform, Real Good Fish is also expanding the concept of "community supported" by offering members the option to serve as a "site host" in their own communities. This delivery option sets up local pick-up locations run by CSF members to help aggregate orders and create that sense of connection and community in towns and cities far from the central California coast where the company is headquartered.[22]

Alaskan Wild Company is a seafood company that provides wild-caught Alaskan fish to consumers across the USA. Founded in 2017, Alaskan Wild Company is a self-proclaimed "tech company" that offers three different types of seafood boxes, delivered monthly to consumers' doorsteps. The approach is what enables the company to maximize logistical efficiencies, keeping costs down and deliveries on-time. They also leverage one of the unique aspects of D2C models—copious amounts of consumer data and opportunity for direct connection in order to create a personalized experience. In the first months of the pandemic, the company grew from 18 to 50 employees—their "digital fishmongers"—who had to undergo extensive customer service training in subjects such as sustainable fisheries, Alaskan fishing history, Alaskan indigenous fisheries, and local policy. By leveraging the power of digital systems to manage inventory, client services, marketing, and logistics, Alaskan Wild Company has continued to maintain growth and retain members gained during the initial COVID-driven spike in 2020 over a year later.

---

21   Packaged Facts. *"Packaged Facts Analyst Comments on Home Chef Hitting the $1B Mark as the Meal Kit Industry Continues to Benefit from Pandemic Eating Trends."* Perishable News, 27 Oct. 2021.

22   *"Real Good Fish | How It Works."* Real Good Fish, Accessed 1 Nov. 2021.
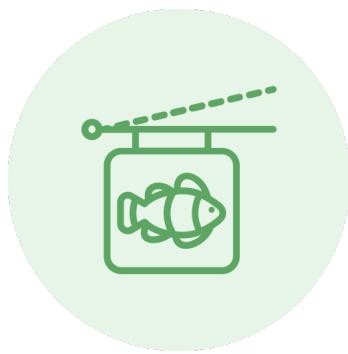
FISHMONGER 2.0

Description: Among the lessons learned from the COVID-19 pandemic include the benefits of small physical locations for building community connection as well as serving as fulfillment centers for home delivery. Across the D2C sector, there is a nascent trend towards digitally native companies embracing an offline presence—often through pop-up shops or kiosks.[23] Within seafood, wholesalers and distributors are selling domestically sourced product at **physical locations where consumers can shop in person, including wet markets, farmers markets, pop-up shops, and small brick-and-mortar stores**. Importantly, these shops are most often supported by options to shop online and access to home delivery.

Delivery Method: In-person transactions happen within the stores; online options provide alternative shopping experience, supported by home delivery. When located in urban or town centers, these shops can provide low-cost delivery options through using courier services that rely on bicycles and motorbikes.

Types of product: Frozen or fresh, typically domestic product; value-added products. Some carry products beyond seafood.

Consumer geographic reach: Local, from neighborhood to town or city-scale, often relying on motorbikes or small vans. Online ordering and shipping options allow these businesses to expand their reach to a national scale—frequently, these consumers include tourists or individuals who have visited the shop in the past.

Where we see these models: All over the world, including Mexico, Chile, Singapore, and the United States.

Average Number of Supply Chain Nodes:
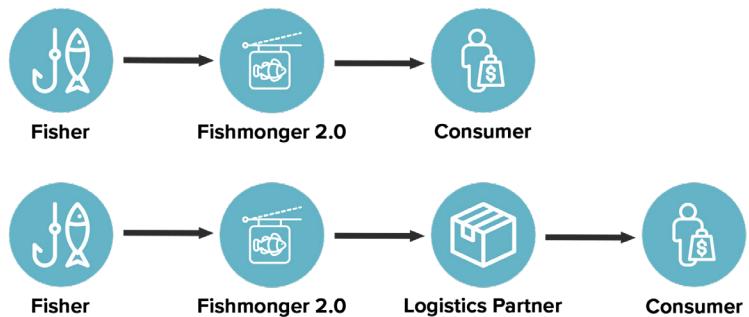
Commonly used tech:

- Social media for marketing, including direct contact with consumers via Facebook, Instagram, or WhatsApp to let them know of specials or new products
- Online marketplaces that list business locations and help connect consumers with local seafood options.
- E-commerce platforms such as Shopify, to help manage inventory across online and in-store purchases
- Third party delivery apps

Strengths: Businesses in this D2C category are building off two current trends — the online to offline (O2O) trend in retail[24] (Figure 2) and consumers wanting all options.

23   Kenneth Franks. *"Direct-to-Consumer Trends in 2021."* The Jotform Blog, 19 Apr. 2021.

24   Good Rebels. *"The Rise of Direct-to-Consumer."* Medium, 21 July 2020.

Figure 2. Visualization and description of online to offline (O2O) business strategies. Fishmonger 2.0 models are particularly well-positioned to take advantage of this trend. Interestingly, we also heard multiple examples where the flow worked in the opposite direction—consumers came to the store to view products; once trust was built, they were more comfortable shopping online from the company. Credit: Norwegian Seafood Council, 2021.

Consumers are demanding a range of choices when it comes to their shopping experience—from products to delivery methods. Providing physical locations where consumers can view products, ask questions, and, yes, voice complaints, can go a long way in building trusted relationships. By adding online ordering options with home delivery, these businesses also meet consumers' desire for convenience. During COVID, the flexibility of having both online and offline shopping experiences served companies well—when consumers were able to shop, they welcomed the opportunity to leave their homes and be in the stores; when restrictions came back or life became too busy, the ability to purchase online—from a trusted and tested source—meant consumers remained loyal to their neighborhood fishmonger.

These shops are also well-positioned to provide ready-to-go and ready-to-cook options—a benefit that continues to be highly valued during the ongoing pandemic.

Another strength of these models is that they often require significantly less investment than expansion into online home delivery. Trial and error by some companies that experimented with home delivery found that the costs of building out teams

and infrastructure to support logistics of home delivery and online sales and marketing was enormous, and required significant investment capital. In contrast, opening a small retail location can be far more cost effective.

"We opened retail—it has better unit economics then selling into CPG grocery or D2C" – Seafood Distributor

---

Brick and mortar shops can also serve as fulfillment centers for local home delivery services. At a global scale, e-commerce and shifting consumer behavior is driving a boom in micro-fulfillment centers as a way to support the increased demand from online shoppers. These small outfits allow e-commerce vendors to more efficiently and effectively fulfill orders—especially within the short time horizons (1-2 hrs) many consumers now expect in urban areas.[25] Small fishmonger shops can serve this function for businesses that are growing their reach through online sales, while also doubling as hubs for local consumers to connect, learn, and try out new products.

Weaknesses: Businesses in this category noted the challenge of coordinating inventory and consumer activity across online and offline sales channels. Especially for smaller companies, this omnichannel approach—while effective—requires significant investment in systems to help monitor and manage product flows.

Depending on the location, the real estate for these shops may be difficult to secure, particularly around dwindling working waterfront locations. Regulations around food safety and sales can also limit availability of space. Meanwhile, competition from the retail sector for small spaces is on the rise, in large part due to the booming microfulfillment trend.

Small shops reduce overhead, but they also limit the amount of inventory a business can carry. This can lead to disappointment from customers who come in and can't find what they need; it also may be a disadvantage in negotiations with third-party

logistics partners, many of whom set prices based on order volumes.

Deeper Dive into Fishmonger 2.0 model:

Dish The Fish

Dish the Fish[26] in Singapore is a modern fishmonger born from the traditional wet markets. Recognizing the opportunity to modernize sales routes, the founders of Dish The Fish built out a consumer-friendly market stall design and added an e-commerce website in 2016 that supports multiple languages.[27] Today, they have grown to two retail locations, the second store supporting cooking demonstrations, classes, and samples of seafood products. The stores provide highly customized shopping experiences, where customers can ask questions, learn about new species and preparations—such as vacuum sealed fish portions with herbs that are ready-to-cook. This level of customer care extends online, where customers can pick and choose their products, including the cuts.

"Many of our customers who started out just eating at the cooking studio in this outlet have converted to retail and even became online customers. Each of our sales avenues works together to achieve our overarching sales strategy," – Angeline Ong, Co-founder of DishTheFish, Singapore.

With a strongly consumer- oriented model based on a digital platform, Dish The Fish also relies on extensive social media to engage their customers and keep them updated on what is available. Sourcing from all over the world, this small fishmonger provides a large diversity of seafood that their customers have come to trust. By expanding online and strategically selecting a second retail outlet, they have been able to grow their business.

---

25   Peter Buxbaum. *Micro-Fulfillment: The Future of Grocery e-Commerce.* 21 June 2021.

26   *"Dish the Fish- Our Story."* Dish The Fish, Accessed 1 Nov. 2021.

27   Alanna Tan. *"Meet The New-Age Fishmongers - This S'porean Couple Uses Tech To 'Scale' Their Business."* Vulcan Post, 20 June 2018.

Tres Peces

The story of Tres Peces[28] offers a version of the Fishmonger model that originated within the food service sector in Chile. Originally a restaurant focused on sustainable, small-scale fisheries, Tres Peses was forced to reconsider its business model during the first lockdown period in March 2020. Turning to their existing inventory of frozen fish and wine, founder Meyling Tang began to cook meals for her loyal customers to pick up. These ready-to-go products, based on popular menu items, sold so well that she was able to expand the business.

Shutting down the original restaurant, Meyling has moved into a smaller location and exclusively provides meals that are ready-to-cook. Meyling continues to source from the same artisanal fishers as she did for the restaurant, continuing to support local fishing communities. Her products are all delivered in hand-made clay pots, sourced from a local artisan in order to reduce waste associated with home delivery and to increase the attractiveness of the seafood. Tres Peces relies heavily on Instagram and Facebook to market its products and engage with its clientele, but all sales are conducted via WhatsApp Business, helping to keep down the cost of operations. With no plans to return to in-dining set-up, Tres Peces has embraced a new direct-to-consumer model that repositions chef and restaurant as meal-delivery providers.

SmartFish Inc

The social enterprise SmartFish Inc launched their online, direct-to-consumer business prior to COVID-19; with the pandemic, the sales through this platform spiked. However, long-term growth seen by SmartFish is largely in response to the recent opening of two new retail outlets. Online sales have continued to provide a steady source of revenue, but even at the height of the pandemic, customers returned to the store—as a reprieve from the lockdowns and movement restrictions, as a way to check out product before purchasing, and as a means to support the community via SmartFish's commitment to sourcing from local, artisanal, sustainable fisheries.

A key to success for the retail-online hybrid model is a focus on diversification: to products beyond seafood, and to product forms that include ready-to-cook meals. Through partnerships with other food makers and even local restaurants that co-brand prepared seafood dishes for sale in the retail outlets, SmartFish has managed to pack a lot of options into their small store locations; supported by the secondary option of home delivery.

By acting quickly during the first wave of lockdowns, SmartFish also secured a partnership with a local logistics company that provided fast delivery—faster than the local grocery stores—helping to build confidence among customers in SmartFish's online shopping and delivery services. While the volume of sales online has since declined and stabilized from the initial peak, the revenue stream is still significant, and SmartFish plans to continue to pursue both online and offline sales channels into the future.

28   *Tres Peces- Facebook Page*. Accessed 1 Nov. 2021.

ONLINE BRAND+

Description: Traditional, B2B seafood companies and new, digitally native companies are investing in e-commerce platforms to develop D2C sales channels,competing for customers who are searching for convenient (fast, diverse) seafood delivery.

> *"Restaurants and hotels are still our most successful part of the business, but retail is coming up and home delivery is strong."*
> *—Indonesian Distributor*

This model requires investment into partnerships to provide logistics at scale, in order to support a more geographically diffuse customer base. Because of increasingly crowded online options, many of these companies are investing heavily in building expert digital marketing strategies and brand differentiation in order to distinguish themselves from their competitors.

Delivery Methods: Primary third-party logistic partners; for regional distribution, the Brand+ may have their own fleet of trucks

Types of product: Large diversity of fresh, frozen, and processed products, including branded value-add. Sourcing includes domestic and international fisheries. Businesses in this model tend to have the largest selection of product forms and types out of all the models—the exceptions are those that are focused on highlighting a specific region's seafood (for example, TrueFin in the USA)[29] or

type of seafood (see SoloPulpo in Spain).[30]

Consumer geographic reach of D2C: National

Where we see these models in the world: Widespread, from North America to the UK to SE Asia, we see a combination of traditional mid-chain players and new, fully-online companies, embracing this model.

Potential Number of Supply Chain Nodes:

| Fisher | Brand + | Consumer |

| Fisher | Brand + | Logistics Partner | Consumer |
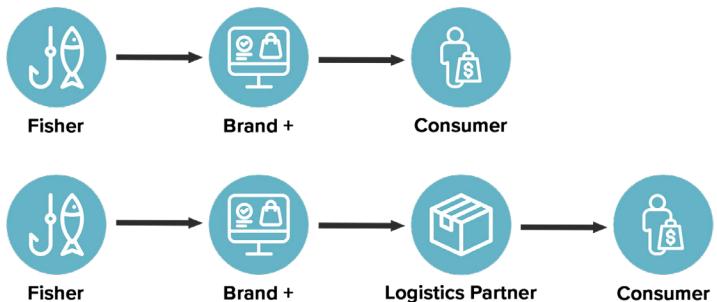
Commonly used tech:

- BigCommerce, Shopify, and other e-commerce platforms that allow for online transactions and integration of inventory management across multiple sales channels (D2C, B2B).

- Third-party delivery apps such as GoFood or GoMart (Gojek); Instacart

- Online marketplaces: Mercato, FarmFinder, Tokopedia, Goldbelly

- Social media platforms for marketing and sales, including Facebook and Instagram

Strengths

Many Brand+ D2C companies build off the backbone of an existing business, especially the sourcing and processing relationships and expertise. Even Aruna, a digitally native company, started B2B before moving into D2C. Once Brand+ Have the right partnerships and access to product, however, they can significantly increase their consumer base via online sales. This requires investment into digital marketing strategies, but many companies have found it worth it. With more

---

29   *"True Fin Premium Gulf of Maine Seafood."* True Fin, Accessed 1 Nov. 2021.

30   *"Qué es solopulpo.com - SoloPulpo."* Solo Pulpo, Accessed 1 Nov. 2021.

infrastructure at their disposal, these companies can also adjust their products to meet the evolving needs of consumers—value-add products, frozen, and ready-to-cook especially. By adding D2C to already existing wholesale or retail business, these companies are able to diversify their revenue streams.

Weaknesses

For digitally native or mid-chain companies, building brand identity without physical presence depends on online marketing—cutting through the competition in a crowded space. And because online seafood sales and delivery is so new, this often requires hiring outside experts who can help not only design the website, but also run the analytics to optimize user experience and build in customer service functions and consumer behavior analytics.

Also, logistics are a heavy lift for home delivery, and companies must choose to either invest in building their own fleets (which is a whole separate business) or securing partnerships with existing third party providers. The latter is the more common option, but runs the risk of losing some control over the product. Current logistics providers often do not provide assurances for product, which puts all the risk on the D2C company.

Another challenge for these companies can come int he form of competition for product. As retailers move towards grab-and-go and ready-to-cook options, they are targeting a similar consumer base. Also competition for product can come from food services as they comes back online.

Deeper Dive into Brand+ Model:

In North America, multiple distributors have added an online D2C element to their traditional B2B models. These companies are investing in the teams necessary to successfully build online marketing and logistics strategies that can attract consumers and reliably deliver high-quality products to their doorstep. All of these models are providing at-home delivery nation-wide—but sources of product range from local to global. For some companies, the brand is rooted in the unique story of a region's fishing history and the species that are found there; for others, they source from around the world, anchoring their brand in

quality, and, especially, trust. These companies push their strong traceability and environmentally friendly practices, including packaging, as part of their value proposition. Many of these businesses are also building in additional incentives, such as discounts for referrals or repeat purchases. Ultimately, North America mid-chain players are successfully leveraging the online D2C opportunity to tell their story and attract consumers that are aligned with their brand's values.

Aruna Seafood in Indonesia is an example of a growing Brand+ model that is digitally native. The company is a fisheries e-commerce start-up that was founded on the premise of building more equitable and environmentally sustainable fisheries around the world. Aruna first built an online auction and digital marketplace to help connect Indonesia's thousands of fishers with better markets at home and abroad. Through the digital marketplace, transaction costs are reduced and both fishers and buyers engage in more profitable business deals. To date, Aruna's system has helped fishers increase their earnings by 20-30%. With its beginnings in B2B, Aruna expanded its offerings to the domestic market in 2020 with the launch of Seafood by Aruna.[31] Taking advantage of the spike in online seafood demand caused by the COVID-19 pandemic, Aruna pushed forward quickly with its D2C efforts, which provide online shopping and home delivery to Indonesian households. In addition to their own e-commerce website, Aruna's products are also available on Tokopedia, Shopee, Bukalapak and Grab Mart platforms. Having secured another round of investment funding in 2020, the company is looking to expand its sourcing (and technical support) to more coastal fishing villages in Indonesia while also growing the domestic market program. To date, they have engaged over 20,000 fishers across Indonesia.[32]

---

31   *"Aruna."* Seafood by Aruna, Accessed 1 Nov. 2021.

32   *"The Largest Integrated Fisheries Commerce In Indonesia - Aruna."* Aruna, Accessed 1 Nov. 2021.

SUMMARY OF D2C MODELS IN SEAFOOD

Around the world and across the supply chain, seafood entrepreneurs are embracing an ever-growing variety of D2C business models (Figure 3). Still in its infancy, D2C for food and beverage is a fast-growing and highly competitive space; these sector-wide trends are reflected within the seafood category, as both new companies and existing ones turn to D2C for solutions.

D2C Models Around the World

Figure 3. Examples of existing D2C seafood companies around the world and which of the four categories they occur in. Letters represent individual D2C seafood businesses as follows: (a) Organic Ocean; (v) Santa Monica Seafood; (c) Sizzle Fish; (d) Dock to Dish; (e) Ocean2Table; (f) Smart Fish; (g) Olha o Peixe!; (h) Pesca en Linea; (i) Ferias Online; (j) Mi Caleta; (k) Pesca Nova; (l) SoloPulpo; (m) Fishbox; (n) Blue Lobster; (o) Day Sea Day; (p) Tres Peces; (q) Ruta de las Caletas; (r) La Pescadería de mi Barrio; (s) Abalobi Marketplace Fishers; (t) Chef ME at Home; (u) Jalongi; (v) My Seafood Mart; (w) Dish the Fish; (x) Aruna; (y) Fish Tiangge Fishers; (z) Fair Fish.

In order to analyze existing models, we distilled four major categories of D2C approaches. None of these categories are exclusive—many companies have multiple sales streams, some of which fall into one or more of these approaches. For example, the USA-based online seafood subscription service, Sizzlefish, has a typical online store (Brand+) but also offers different monthly subscription boxes, which change depending on the catch (Membership Model).

This flexibility is part of what makes the D2C space difficult to track and predict, but it is also what is driving powerful new sales channels being tested by actors across the seafood supply chain. **Fishers** are engaging via CSFs and through local seafood finders, which send consumers to habors for dockside sales. **Processors, wholesalers and distributors** have embraced D2C in multiple ways—from setting up small shops and entering the retail space to launching full-blown e-commerce websites with overnight delivery. Even **traditional fish market vendors** are launching online versions of their stalls, to grow their client base. And, in Chile and Southern Europe, **restaurant chefs** are providing not just take-out, but ready-to-cook meals that can be both picked up or shipped home. In the UK, there is even "an app" for that. Well, a website: **Restaurant Kits** (https://restaurantkitsuk.com) aims to recreate the restaurant experience at home by providing the ingredients and recipes for favorite menu dishes from restaurants around the UK.

Durability and Scale

While there are many factors that can affect the ability of seafood actors to effectively engage a D2C approach, the potential for D2C strategies to succeed and scale depends largely on three elements:

1. **Enabling Conditions:** existing resources that allow a model or business to take root and get off the ground;

2. **Challenges:** obstacles that may slow or prevent progress; and

3. **Drivers:** forces within or outside the system that lend momentum to a strategy

Where enabling conditions are plentiful, drivers are strong and diverse, and challenges are few—these models are expected to thrive. Where enabling conditions and drivers are limited, D2C efforts are likely to stall out or remain at small-scales. Ultimately, successful D2C initiatives will require additional resources and innovations to overcome contexts where challenges are many and complex.

ENABLING CONDITIONS

The following factors make it possible for different D2C models to get off the ground. Depending on the model, these conditions may be more or less important (see Table 1).

Last Mile Delivery Options in Place
We are in a new era of home delivery and last mile logistics investments powered by e-commerce giants like Amazon, where large corporations either build their own fleets, or directly hire or contract out work to delivery services, rapidly accelerating access to home-delivery. From the USA to Indonesia to Mexico, we heard that last mile delivery services have increased dramatically since COVID. In multiple regions, the ability to leverage electric motorbikes and bicycles are increasingly being used as a way to lower costs, while still reaching larger numbers of customers. However, even the most advanced logistics systems struggle to overcome infrastructure barriers such as poor road conditions, inability to access transport by air or sea, limited access to the internet, or lack of materials for transport (e.g. appropriate packaging, refrigeration, or trucks). This problem also persists in rural areas, where large distances between the consumer and food provider limits both the financial value and efficacy of the delivery service. In these contexts, third-party delivery companies such as Uber Eats or Gojek may not be operational. Without reliable delivery, many D2C models (especially within the Brand+ category) cannot get off the ground.

IT Support
While service providers are making their products ever-more intuitive, the jump to digital sales and e-commerce, and even digital marketing via social media, is one that requires some technological

savviness. D2C companies cited the importance of in-house IT support, and/or family members (often from younger generations) that could help with the adoption of digital systems—from Facebook Marketplace to Shopify—as a key enabling condition for their launch. For Brand+ and other D2C models that rely on online sales, IT support is also critical to ensure that sensitive customer data is protected and so customer concerns can be addressed quickly. Breach of private data or the inability to address consumer complaints can be disastrous for any company that relies on e-commerce sales.

Industry and Community Connections
Nearly every business we encountered, from Grassroots to Brand+, local CSF to digitally native store-front—all of them were founded by individuals that worked in seafood or were closely connected with the industry. Seafood is a complicated sector, and that deep, nuanced knowledge of products, supply chain management, and logistics is crucial. So are the trade relationships and networks. For CSFs, strong community connections have been critical for surviving the shocks due to COVID; for newly launched D2C models, reputation, trade relationships, and family connections have been key to allowing efforts to move forward.

Robust Products and Partners for FulFillment
For D2C models depending on online orders and home delivery across large geographic areas, the need for reliable, robust packaging that can keep products safe, cold, and attractive, is key. These pack-ages also need to be affordable and deployed by experts experienced with handling and distributing perishable products. While some smaller operations experiment with DIY boxes and bags, access to co-packers and packaging that is fit-for-purpose is critical to a D2C venture taking off and maintaining food safety standards.

Cultural Fit
Pre-existing conditions at a national or local level have also impacted the successes and failures of digi-tally driven D2C enterprises, including:

- pre-COVID levels of digital literacy;

- the existence or absence of a "seafood" culture;

- gender and age distribution of the population and their respective comfort with e-commerce platforms;

- geographic location (access to product);

- interest in local or storied products; and

- consumer awareness of the value of sustainable seafood.

Successful actors are those who either built their system where there were existing conditions of cultural acceptance, **or** those who were able to adapt their products to better meet customers where they are while also providing education to help increase their acceptance and interest in the new model.

Exceptional Customer Service From the Start
Whether it is managing a disappointed customer who arrived dockside to an empty boat, or a consumer 1000 miles away who didn't like the look of their seafood box, D2C companies need well-trained cus-tomer service support from day one. This is because for all D2C (inside and outside of seafood), the busi-ness hinges on the consumer experience—at the end of the day, that is what is being sold, more than the product. D2C companies must have this aspect of the business firmly in place before going live.

Summary of Enabling Conditions
Looking across all the models (Table 1), it is not surprising that Membership Models (except for CSFs) and Brand+ have more "requirements" for getting off the ground, compared with the Grassroots and Fishmonger Models. This indicates that these approaches may be more limited with regard to where

they can emerge and to scale than the other efforts. The dependency on last mile logistics and IT capacity, in particular, may restrict these models to more developed world contexts. That said, there are numerous digital and physical drivers outside of seafood that directly affect global-level infrastructure, and are already accelerating conditions for these models (see Drivers).

Table 1. Summary of key enabling conditions for different models. These are the conditions that allow for an initiative to take root and launch, but alone do not ensure scale or durability. Note: CSFs and Seafoodboxes/Meal Kits have been separated out for the Membership Models due to the different geographic reach and reliance on online sales.

ENABLING CONDITIONS	GRASSROOTS	CSFS	MEAL KITS AND SEAFOOD BOXES	FISHMONGER 2.0	BRAND+
Last Mile Delivery Options in Place			X		X
IT Support			X	X	X
Industry and Community Connections	X	X	X	X	X
Robust Products and Partners for FulFillment			X		X
Cultural Fit	X	X	X	X	
Exceptional Customer Service From the Start	X	X	X	X	X

CHALLENGES

Within any innovative space, there are more failures than successes. Understanding how and why D2C models may have failed, and the continued obstacles entrepreneurs face in executing these models, can help improve strategies as well as business effectiveness and adaptability to different contexts.

Home Delivery Has Cost to People and Planet
One of the major benefits of D2C is the convenience of home delivery. However, this convenience comes with a price—for both the consumer and the planet. First, consumers must absorb the costs associated with shipping, which would normally be reduced in traditional retail models, due to economies of scale. Second, partitioned portions, individual boxes, cold packs, and all the other components necessary to deliver a safe, high-quality, and attractive seafood product through the mail add up to significantly more packaging overall. For meal delivery especially, much of this waste is single-use plastics. For companies committed to sustainable practices, packaging hurdles have been high, with some companies prolonging entry into D2C until they were able to secure affordable eco-friendly alternatives. Finally, the overall impact of D2C models versus traditional retail in terms of carbon footprint remains questionable ,and highly dependent on the specific D2C context (i.e. urban vs rural settings).

"We didn't ever want to ship styrofoam and the industry is plagued with this...So we identified packaging material that was sustainable and renewable, compostable, and can confidently pack product in and maintain cold chain and quality for that shipping." – Seafood Distributor, USA

Digital marketing is a big expense but necessary in an increasingly competitive environment

The online space for seafood delivery is getting more and more crowded every day. Competition for consumers is high, and requires effective marketing strategies that are designed for the online and direct-to-consumer sector. For traditional seafood companies that are expanding into D2C, this is a whole new type of expertise and with it, expense. Even for companies that are not selling online, the ability to leverage social media to drive sales requires knowledge of digital marketing and new technology platforms. For some companies, the cost of digital marketing was high, and similar to marketing for CPG in traditional retail.

"That is a whole job: figuring out how to present products [online], and the mix of pricing of products vs. shipping and when to do discount codes, and to track that—abandoned carts—all that. It's a whole thing." —D2C Seafood Company, USA

Critical Digital and Physical Infrastructure Missing

Whether it is social media for marketing, WhatsApp for transactions, or Shopify for full-blown e-commerce, reliable and fast internet connectivity is critical for D2C businesses to thrive. The havoc wrecked by the recent shutdown of Facebook, Instagram, and WhatsApp in October 2021 was particularly felt by small businesses in Asia and Latin America, who disproportionately depend on these services for communication and commerce.[33]

"For small businesses, Facebook is indispensable. For small businesses, they are a utility that people use, like electricity, like, you know, like rent and everything, to do business. So these small businesses use these platforms as a utility, right? So therefore, if you take away a utility that's indispensable for their business, they don't do any more business. It stops right then, there." -Professor Ayman El Tarabishy at George Washington School of Business. [34]

In many fishing centers around the world, particularly in the Global South, robust connectivity is lacking as are decent roads and cold storage to facilitate the local distribution of products which could support direct-to-consumer models. This lack of infrastructure limits the geographic range and type of D2C models that can exist and thrive.

Some fisheries and species just aren't a good fit

Seafood is one of the most traded food commodities on the planet; it is also one of the most diverse, with thousands of species and product forms. Within all this diversity, there are species and product types that are just not a great fit —as of yet—for some D2C models. First, species that are landed in large volumes require processing and a robust cold chain to move the product. Door-to-door sales, CSFs, and small shops cannot handle these volumes. On the other hand, species that are highly variable in abundance and price are difficult to sell to online D2C outlets that require consistency—such as subscription boxes. Second, species sold live are generally not well-suited for home delivery or more local distribution—instead, they require expensive and expedited shipping straight to end buyers that have capacity to keep the products live until needed. Shellfish, which could prove an exception, are actually the third category of misfits: these products continue to face barriers in the D2C market, from the USA to Portugal, as home chefs struggle with how to cook their own oysters, mussels, and scallops.

---

33   Raymond Zhong and Adam Satariano. *"Facebook's Apps Went Down. The World Saw How Much It Runs on Them."* The New York Times, 5 Oct. 2021. NYTimes.com.

34   *"For Facebook, A Week Of Upheaval Unlike Any Other."* Consider This from NPR, Podcast, NPR, 7 Oct. 2021.

"I don't see the D2C or CSF markets as lasting into the long term in a major way. Our fishers catch too much to move through these channels—the scale is not a fit." –Fisher Association Leader, USA

Lack of existing or willing domestic market

There are several reasons why local consumers may not readily turn to their domestic fisheries as a source of seafood:

1. *Lack of Familiarity*: In many countries, people consume a limited variety of fish and rely on imports more than their own domestic fisheries for their seafood. At the same time, local catch may be exported, leaving consumers with little opportunity to have tried the local catch. Consumers are simply not familiar with the species caught off their own coasts.

2. *Local catch may be difficult to prepare at home* and thus, not popular.

3. *The price point* of the local catch may be too high. This is especially true given income and job loss associated with COVID-19 which has made it more difficult for people to afford seafood.

4. Consumers, *especially from older generations, are still hesitant* to purchase seafood online, unsure of quality and safety.

Whichever the reason, this lack of local market can create a barrier for D2C companies—they must build the market along with their business, putting them at an immediate disadvantage.

D2C loses out to more lucrative markets

The crash of the HORECA sector left many fishers and distributors with little choice BUT to turn to direct sales. And while these efforts may have helped keep business afloat, the prices secured from D2C are often less than what restaurants or hospitality companies can offer. As this sector begins to open back up, many fishers may choose to sell their products back into these traditional markets—threatening supply for D2C companies or simply ending their own D2C businesses. As restaurants begin to open again on a regular basis, the key question for D2C companies remains: how willing are consumers to keep cooking at the rates they have been in recent months, especially as they go back to their offices, families, and after-school activities?

D2C adds work to already full days

For fishers running their own dockside, roadside, or door-to-door sales, the additional work of marketing and selling their catch after a full day fishing is a heavy burden. For small businesses used to trading fish through traditional channels, the learning curve to adapt to the demands of online sales and home delivery is significant..

Online D2C Models Require Investment Capital

Membership and Brand+ models of D2C both require significant capital investment to get up and running—from securing co-packing or processing capacity (currently quite challenging), to customer acquisitions, to the building out a brand online and getting noticed, to securing third party logistic providers… these models require a fair amount of cash. However, investment dollars require certain levels of formalization and sophistication that are absent in many parts of the seafood supply chain, especially small scale fisheries. Investment also can create perverse drivers that force growth at the expense of social or environmental responsibility.

"Logistics of delivering fresh or frozen seafood is complicated and costly when not at scale. Requires investment spending to get from sub-scale to scale." –US Seafood Wholesaler

High Consumer Expectations Are Hard to Meet

Today, consumers are demanding greater transparency and traceability, forcing D2C companies to record, have access to, and publicly share access to traceability data. This is a positive trend, but not always easy (or inexpensive) for a company to secure. In addition, rising expectations for same-day or next-day deliveries are putting pressure on third-party logistics partnerships or straining in-house logistics divisions.

A Good Third Party Logistics Partner is Hard to Find

The direct-to-consumer space is still relatively nascent, and home delivery for seafood is even moreso. Delivering safe, high-quality, and attractive seafood through the mail is not an easy task. One of the benefits of D2C is the control over nearly every aspect of the production process—including how products are priced and marketed. However, in order to scale, the majority of D2C strategies require partnerships with third party logistics companies. To date, these relationships remain uneven, with logistics companies either unreliable, non-existent, or not yet providing insurance and other benefits to their D2C seafood partners. For delivery apps such as UberEats, "partnership" means giving up the relationship with the customer—they are now clients of the app, not the D2C company. For all these reasons, finding a reliable, affordable logistics partner can prove challenging.

"Corner shop, Rapi, UberEats, etc. I choose not to join because they charge alot and keep a high percentage." –Seafood Distributor, Mexico

SUMMARY OF CHALLENGES

Each model has its own primary challenges (Table 2). The degree of reliance on online platforms and the need for long-distance logistical support are two of the major distinguishing features, and essential to determining which types of challenges are most pressing. Some, such as missing infrastructure and competition from other lucrative markets, are barriers that D2C seafood companies have less control over, and require larger initiatives or partnerships to overcome. Others, such as finding more eco-friendly packaging, are, in contrast, more feasible for a company to address. While many of these challenges are significant, the capacity for D2C companies to innovate and overcome them is also increasing, thanks in part to new Drivers in the system.

Table 2. Summary of the challenges to growth and scale for D2C seafood models and which of these challenges is most prevalent or important for each model. Note: CSFs and Seafoodboxes/Meal Kits have been separated out for the Membership Models due to the differences in geographic reach and reliance on online sales.

CHALLENGES	GRASSROOTS	CSFS	MEAL KITS AND SEAFOOD BOXES	FISHMONGER 2.0	BRAND+
Home Delivery Has Cost to People and Planet			X	X	X
Digital marketing is a big expense but necessary in an increasingly competitive environment			X		X
Critical Digital and Physical Infrastructure Missing			X	X	X
Some fisheries and species just aren't a good fit	X	X		X	
Lack of existing or willing domestic market	X	X	X		
D2C loses out to more lucrative markets	X	X		X	
D2C adds work to already full days	X	X			X
Online D2C Models Require Investment Capital			X		X
High Consumer Expectations Are Hard to Meet	X	X	X	X	X
A Good 3rd Party Logistics Partner is Hard to Find			X		X

DRIVERS

The influence of larger, global trends in consumer behavior, technology, politics, and global climate and ecosystem health, can all add momentum to—or take momentum away from—different D2C models. Such forces often exist outside of the seafood system itself. The following are the key drivers currently influencing the D2C seafood sector.

More consumers shopping online, including for seafood

"Today, e-commerce accounts for nearly 28 percent of grocery sales globally...The corona pandemic has put e-commerce two years ahead of previous growth forecasts. Significant growth is also expected in the years to come in this channel, with the highest growth expected in Asia, Africa and the Middle East (Edge by Ascential, 2020b)."– Norwegian Seafood Council[35]

Seafood is tracking the overall grocery trends towards increased online purchases. A 2020 survey by the Norwegian Seafood Council of more than 23,000 individuals across a diverse group of countries found many who cited they "often/very often" shop for seafood online (Figure 4).36

Top Seafood Consumer Trends 2021 / New Sales Channels
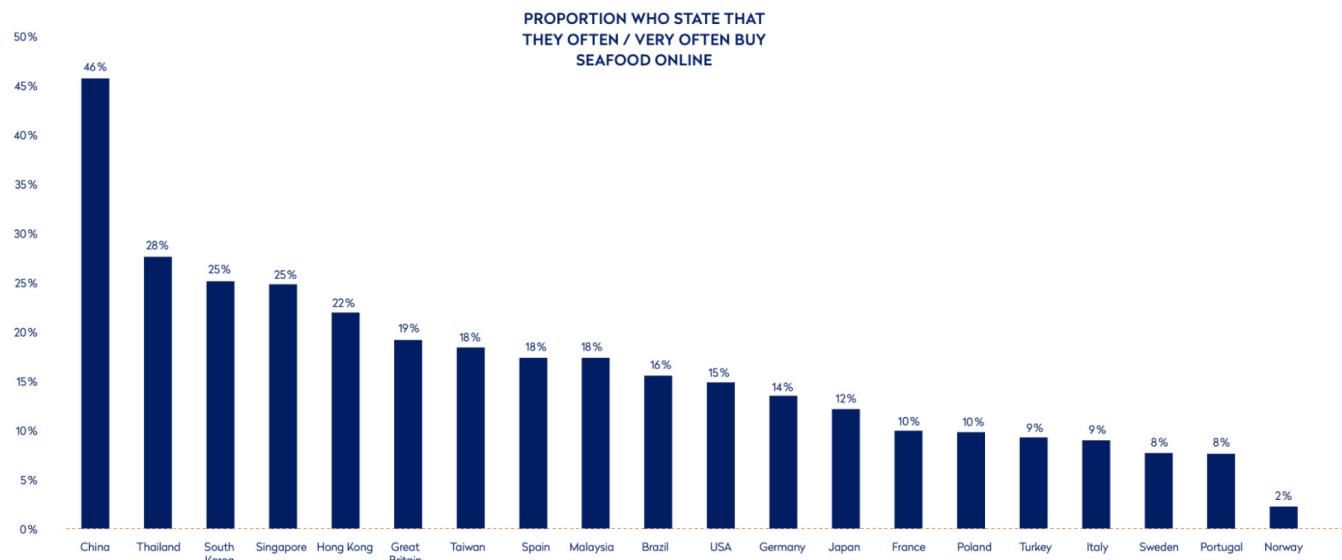
Figure 4. Results of Norwegian Seafood Council's 2020 annual survey of 23,000 individuals who state that they "often/very often" shop seafood online.

While consumers in Asian countries lead this trend, the report notes that "Globally, it is those in the 20–34 age group who most often state that they "often/very often" shop seafood online, with a share of over 20 percent. By comparison, about 10 per cent in the 50–65 age group report the same."

---

35   Norwegian Seafood Council. *What Trends Will Affect Seafood and the Norwegian Seafood Industry in the Years to Come?* 2021.

36   Norwegian Seafood Council. *What Trends Will Affect Seafood and the Norwegian Seafood Industry in the Years to Come?* 2021.

Shifting Consumer Demands

Customer demographics are shifting, and the new generation of consumers has different demands and expectations. In a social media age, companies are not just selling a product, they are selling a story about who they are, and why the customer should choose *them* in a world of simple, one-click options. There are several different values that today's consumers—Millennials and Gen Z generations especial-ly— are looking for, including:

- Convenience
- Multiple Options
- Personalized Experience
- Healthy Choices
- Authentic

Convenience

For seafood, the desire for convenience includes demand for packaged, ready-to-cook, and portable options.[37] Convenience is also driving demand for frozen products, which can be easily stored and ac-cessed for quick meals when needed.

Convenience can also mean saving time shopping and having groceries delivered at home—both pos-sible with e-commerce. A 2019 study by e-commerce platform ScaleFast found that 22% of consumers noted the option of same-day-delivery as an important purchase decision[38] And that was before the pandemic. Consumers today are increasingly turning to online shopping to more easily find products and have them shipped to their doorstep.

To help assess the landscape of online seafood sales and delivery, we looked across seven countries to see how patterns in online searches for seafood may have shifted over the past 18 months (Appendix 1). The Google search trends for "food" remained elevated in 2021 above pre-COVID-19 levels in all seven countries, though in Mexico and Indonesia, the levels were slightly lower than 2020. Searches for "sea-food" also were higher in 2021 than pre-COVID-19 in the USA, Canada, Mexico, and Indonesia. In Spain, Chile, and Peru, searches for "seafood" did not change much over the course of the pandemic.

Searches for "restaurant" remained higher in 2021 for the USA, Canada, Spain, and Mexico, with Chile and Peru returning to pre-COVID-19 levels. In the USA, Canada, and Mexico, consumers continued to search more for "seafood restaurant" in 2021 compared with before COVID-19, with Mexican consumers just slightly above pre-COVID-19 levels.

Results for food delivery searches were more mixed. In Spain, Mexico, and Chile, there was no notice-able change over time in how much individuals searched for "food delivery." But this may reflect the use of alternative platforms for searching for food and food delivery online, such as Gojek[39], Grab Food[40] or Rappi.[41] In contrast, "seafood delivery" was not a frequent enough term to analyze i except in Canada and the USA—for both, frequency of searches remained higher than in pre-COVID years in 2021, but decreased slightly from 2020. Again the lack of activity in other countries may be due to a reliance on apps to locate seafood delivery options rather than google searches.

---

37   Fortune Business Insights. *Seafood Packaging Market Size, Share, Growth* | Industry Report, 2027. FBI103399, Fortune Business In-sights, Dec. 2020.

38   Good Rebels. *"The Rise of Direct-to-Consumer."* Medium, 21 July 2020.

39   *"Gojek: A SuperApp with Transport, Payments, Food Delivery and More."* Gojek, Accessed 18 Oct. 2021.

40   *"GrabFood | Food Delivery Service - Promos & Menu."* Grabfood ID, Accessed 18 Oct. 2021.

41   *"Delivery de Pedidos Online en minutos | Rappi Perú."* Rappi, Accessed 18 Oct. 2021.

Overall, consumers in the USA, Mexico, Canada, and Indonesia appear to be searching more online for food and seafood than before the pandemic. But results become more mixed when looking at searches for restaurants or home delivery—this may in part be due to the proliferation of other platforms, such as delivery apps, that are more popular than Google for online food delivery.

All the Options, but Make it Personal

More and more, consumers expect all options to be available, at all times—delivery or pick-up, diversity of products. At the same time, they want to feel like their online shopping experience is catering to their interests. According to Blue Acorn iCi, a digital consumer experience company, "80% of customers are more likely to make a purchase when a brand presents a personalized experience."[42] D2C models are uniquely positioned, with an abundance of consumer data and direct communication pathways, to fulfill this need and thus, out-shine traditional retail.

Healthy Choices

Another important consumer trend for seafood is the increased focus on healthy eating habits. As consumers have a growing awareness of seafood as a nutritious and safe food choice, interest and demand for seafood options is likely to increase.[43] Changing Tastes's Go Fish study reports that 35% of men and 25% of women in the USA want to eat more fish and seafood.[44]

Authenticity and Assurance

Today, consumers want to know where their products come from, and want to support companies that are treating their employees and the environment well. Who the company is, matters.[45] And D2C companies are able to provide this authenticity due to the direct communication with the consumer, as well as investment into a strong, storied brand. By providing detailed information about source of the product, and information (via traceability systems) about it's pathway to the consumer—which in D2C is much simpler—these companies can out-perform traditional and more complex seafood supply chains in terms of creating that sense of assurance.

"The COVID-19 pandemic did not only contribute to further distrust in seafood, but has also led to consumers placing greater emphasis on health and well-being, generating increasing interest in where their food comes from. As a result, mechanisms that provide assurance about the production process and origin of seafood become increasingly important. The traceability of seafood products is becoming a popular assurance mechanism in the seafood industry and buyers are increasingly asking for it."[46]

Technologies That Help Capture and Keep Customers

Part of the reason that social media platforms such as Instagram or Facebook have had such tremendous uptake is that they were specifically created to be user friendly, adatable, and above all, addictive—all the data these companies collect are directly applied towards figuring out how to successfully market brands, products, and ideas back to the consumer and keep them coming back for more. Successful electronic D2C platforms function in a similar fashion, with one of the major benefits of digital systems for the vendor being the ability to gather invaluable information about their customer base.

42   *Blue Acorn iCi. D2C: The Next Growth Wave for Food & Beverage Brands.*

43   Fortune Business Insights. *Seafood Packaging Market Size, Share, Growth.* Industry Report, 2027. FBI103399, Fortune Business Insights, Dec. 2020.

44   Changing Tastes. *Go Fish: The Great American Reconsideration of Our Protein Choices.* May 2020.

45   Erin Hynes. *"D2C Brands Are a Prime Target for Gen Z's $143 Billion of Buying Power."* Diff, 21 July 2020.

46   CBI- Ministry of Foreign Affairs. *"What Trends Offer Opportunities or Pose Threats to the European Fish and Seafood Market? | CBI."* Centre for the Promotion of Imports from Developing Countries (CBI), 30 Aug. 2021.

This is particularly true as many e-commerce companies are shifting to omnichannel sales options while continuing to integrate user data across platforms. Detailed consumer data is now being applied by both larger companies as well as smaller D2C startups to figure out how to both grow and maintain their customer base. Key elements include targeted social media advertisements, same-day delivery, live streaming sales[47], and customer rewards.

More Technologies That Reinforce D2C
Varying levels of comfort and capacity means there is no one-size-fits-all approach to technology—for companies or consumers. But an ever-increasing proliferation of tools and products is lowering the barrier to entry for D2C no matter the starting point. For companies, D2C e-commerce platforms can be extremely accessible, leveraged through existing technology (e.g. Facebook, WhatsApp), of medium/standard complexity (e.g. Squarespace or Wordpress), or significantly more advanced (e.g. Shopify plus[48]). The current array of models, tools, and platforms available for e-commerce mean that growing numbers of businesses and customers are able to leverage and access online markets effectively.

Within the seafood space, multiple online tools and resources have already emerged, which directly support seafood companies deploying D2C strategies (Figure 1, upper panel) and Table 3). These "ancillary" and supportive technology solutions help to support growth of seafood D2C (and is a strong indication of durability of the sector).

---

47   *"CommentSold - Live Selling Is the Most Engaging Way to Sell Online."* CommentSold, Accessed 1 Nov. 2021.
48   *Shopify Plus: Built for the Biggest Flash Sales and Ecommerce Campaigns in the World.* Accessed 1 Nov. 2021.

Table 3. Examples of different kinds of digital infrastructure that support continued growth of the D2C seafood sector.

TECH SOLUTION	SUPPLY CHAIN NODE		
	Fisher	Intermediary	Retail/ Fish Vendors
Digital maps and local seafood finder apps	FishLine (Global) HaverFriskFisk (Denmark)	Local Catch Network (US and Canada)	Local Catch Network (US and Canada) Discovery Seafood (UK) Fish Line (Global)
Marketing and communications	Instagram Facebook WhatsApp WhatsApp Business TikTok Twitter	Instagram Facebook WhatsApp WhatsApp Business Paid advertising on social media channels Twitter	Instagram Facebook WhatsApp WhatsApp Business Omnichannel tools to cross-coordinate TikTok Twitter
Marketplace (sales) + logistics	Abalobi Marketplace (South Africa) Mi Caleta (Chile) Seafood by Aruna marketplace eKadiwa (Philippines)	E-Fish (US) Goldbelly (US) Mercato (US)	Tokopedia (Indonesia) Fresh to Home (UAE)[49] UberEats DoorDash Instacart GoMart GoFood
E-commerce website or App	Facebook Marketplace Facebook Shop CommentSold	Shopify WooCommerce (Global)	Shopify CommentSold WooCommerce

Innovations in Processing, Packaging, and Cold Chain

Logistical hurdles have long been a barrier in the seafood industry, where the effort and cost required to safely package and transport both fresh and frozen products inhibits scale for many companies and reduces access to seafood for many consumers. However, COVID-19 has greatly accelerated the growth of alternative options for packaging and spurred innovations in cold chain and processing technologies that can save time and increase efficiencies. We heard about motorbikes with solar-powered coolers being tested to replace cars and trucks carrying styrofoam boxes in Bali; North American companies considering the possibility of replacing plastics with biodegradable seaweed packaging; and small scale

49   *FreshToHome - Buy Fresh Fish Online*. Accessed 1 Nov. 2021.

fish vendor in Singapore adopting new automatic scaling equipment that helps him meet his customer demands for quick turnaround time. Investments in technology-driven "smart packaging" are also helping to preserve food quality and safety, provide traceability, and handle the high moisture content of seafood.[50] This includes the development of active and intelligent packaging options, which bring additional benefits to help ensure product integrity and quality.[51]

As part of the trend towards authentic and sustainable branding, more D2C seafood companies are also demanding (and promoting) use of "eco-friendly packaging," which serves as a positive feedback loop for the packaging industry (Figure 5).
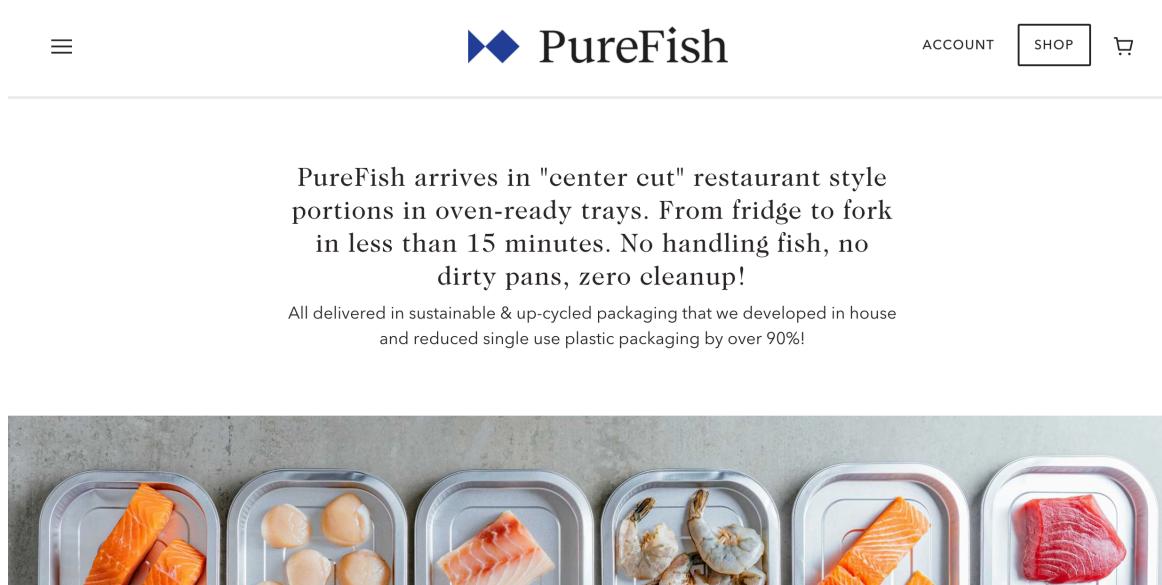
Figure 5. Homepage for The Fish Society, an online seafood distributor in the UK, highlighting their use of recyclable boxes. Website accessed on Oct 1, 2021.

Increasing Interest and Support for Domestic Markets

The threat of food insecurity, closure of international borders, on-going shipping and logistic challenges, and lack of international tourism, led many governments to launch marketing campaigns and create other tools to boost domestic consumption of locally caught species. Today, many of these efforts continue, complemented by additional initiative led by industry and academia, to grow demand for local seafood.

Examples of efforts to drive domestic consumption include:

1. England's Domestic Seafood Supply Scheme[52]

2. The Close Catch initiative in the Netherlands, to drive greater demand for North Sea fish, especially among youth.[53]

3. The recently launched "Scale Your Local Catch" program, funded by the USDA and led by Local Catch, to "help new and established direct marketing businesses achieve their goals via a cohort-based accelerator."[54]

4. Government funded marketing and branding support, as well as training, to help China's domestic

50   Seafood Source Sponsored. *Active Packaging for the Rising Ecommerce Demand*. Webinar, 2021.

51   *"What Is Smart Packaging? The Rise of Smart Packaging."* The Run Time, 7 Mar. 2021.

52   Marine Management Organisation. *"Domestic Seafood Supply Scheme (DSSS): How to Apply for Project Funding."* GOV.UK, 29 Apr. 2020.

53   Paul Einerhand. *Potential for Locally Caught Fish.* Fish Magazine. 14 Sept. 2020.

54   Local Catch Network. *"Scale Your Local Catch."* Local Catch Network, Accessed 20 Oct. 2021.

seafood companies meet growing demand, while also making foreign access to its market more difficult.[55]

For more details on this trend, see Future of Fish's report "Global Impacts of the COVID-19 Pandemic on the Seafood Industry."

Last Mile Logistics Are Improving

Logistics are an enabling condition, a challenge, and a driver. This is because, some level of connectivity—for digital and physical transactions—must be in place for a D2C model to launch and take root. The lack of this enabling condition is a major challenge still in many fishing regions of the world. However, three global-level trends have helped to create vast improvements in especially last-mile logistics over the past few years, especially since the pandemic:

1. The rise of e-commerce on the global scale

2. Advancements in logistic systems, including digital systems for managing inventory and distribution; and

3. Improvements in product packaging to reduce waste and ensure product integrity.

Thus, while logistics remain a major hurdle in many parts of the world, they are improving rapidly and at scale.

"E-commerce depends on technological development, such as secure payment solutions, home delivery and securing 'the last mile' – meaning that you can get refrigerated goods delivered to your door. This is especially important for seafood products. There is a rapid development in this area. At the time of writing, for example, Spanish last-mile delivery platform Paack raises USD 53 million in funding" –Edge by Ascential, 2020c.[56]

Interest from Investment Could Drive More Innovation in Food and Beverage E-commerce

As the fastest growing sector in D2C, food and beverage companies are increasingly becoming attractive to investors. While D2C remains relatively nascent, more and more businesses are proving the case that D2C can be an effective and scalable strategy. Currently, the top two (of the top 5) investment trends in Europe are food delivery services (apps) and innovative D2C food brands.[57] The enthusiasm for food delivery start-ups by venture capitalists (VC) does not seem to be waning, despite lockdowns being lifted in many areas.[58] These third-party logistics providers are important infrastructure for D2C brands relying on fast delivery.

D2C seafood companies that brand themselves as sustainable and socially responsible may also attract the attention of the growing impact investment sector, which is pushing for more ESG investments. Higher-rated ESG funds lead by institutional investors fared better in the COVID-19 induced market downturn[59] and experts state that ESG assets under management could climb to $140.5 trillion global total by 2025. According to the Global Impact Investment Initiative (GIIN) the impact investing market strengthened despite the pandemic, exceeding $715 billion in assets under management in 2021, including over 1,720 organizations, which accounts for a 42% increase in comparison to the 2019 survey. All in all, D2C seafood companies, especially those that align with ESG investment goals, all well-positioned to take advantage of some of these trends in the finance space.

55   Mark Godfrey. *"Pandemic Accelerates Major Shifts in China's Seafood Marketplace."* Seafood Source, 27 Apr. 2021.

56   Norwegian Seafood Council. *What Trends Will Affect Seafood and the Norwegian Seafood Industry in the Years to Come?* 2021.

57   Hungry Ventures. *Food Tech Invest Report 2021*. Accessed 19 Jan. 2022.

58   Sam Shead, Sam. *"Lockdowns Are Lifting, but VCs Remain Bullish on Food Delivery Start-Ups."* CNBC, 28 Apr. 2021.

59   *"How Has COVID-19 Impacted ESG Investing? | UBS Global."* Asset Management - Global, Accessed 15 Oct. 2021.

SUMMARY OF DRIVERS

Drivers and the D2C seafood models they most influence are shown in Table 4. All models have multiple drivers that could lend momentum to their progress.

Table 4. Summary of forces and initiatives that are adding momentum to or taking momentum away from different D2C seafood models and which of these drivers is most prevalent or important for each model. A (+) indicates when the driver is helping to accelerate or push a model forward; (-) indicates where the driver may be working against a D2C model's progress or scale. Note: CSFs and Seafoodboxes/Meal Kits have been separated out for the Membership Models due to the differences in geographic reach and reliance on online sales.

DRIVERS	GRASSROOTS	CSFS	MEAL KITS AND SEAFOOD BOXES	FISHMONGER 2.0	BRAND+
More consumers shopping online, including for seafood			X		X
Shifting Consumer Demands	X	X	X	X	X
More Technologies That Help Capture and Keep Customers			X		X
Low-Lift, User-Friendly, and Scalable Technologies	X	X	X	X	X
Innovations in Packaging and Cold Chain		X	X	X	X
Increasing Interest and Support for Domestic Markets	X	X		X	
Last Mile Logistics Are Improving			X	X	X
Interest from Investment Could Drive More Innovation in Food and Beverage E-commerce			X		X

DURABILITY OF D2C MODELS

The combination of enabling conditions, challenges, and drivers helps provide insight into how ripe and developed the landscape for D2C in seafood is and where there are still gaps (Table 5). The more Drivers there are to mitigate (or potentially mitigate) challenges, the faster the rate of uptake or growth of different models; and the more Drivers that may be helping to build enabling conditions, the more we are likely to see replication or adoption of existing models in new contexts. Table 5 summarizes which challenges or enabling conditions may be met by existing drivers. From this table, a few insights emerge. First, there are fewer gray (blank) boxes than boxes with circles—all challenges and most enabling conditions are being met by at least three or more drivers. Second, many drivers are serving to meet both challenges and build enabling conditions, making them powerful drivers in the space.

Table 5. Drivers (abbreviated names) and the Challenges they could help mitigate (black circles) and enabling conditions (red circles) they could help build.

CHALLENGES (●)	DRIVERS							ENABLING CONDITIONS (●)
	More consumers shopping online	Shifting Consumer Demands	More Tech to Keep Customers Coming Back	More Technologies That Reinforce D2Cs	Innovations in Packaging & Cold Chain	Increasing Support for Domestic Markets	Last Mile Logistics Are Improving	
Home Delivery Cost to People and Planet	●	● ●		● ●	● ●	● ●	● ●	Last-Mile Delivery in Place
Digital marketing expensive but necessary	●	●	● ●	● ●		●		IT Support
Critical Digital and Physical Infrastructure Missing	●	●	●	● ●	●	● ●	●	Industry & Community Connections
Fisheries and species don't fit	● ●	● ●	● ●		● ●	● ●	● ●	Robust FulFillment
Lack of domestic market	● ●	● ●	● ●	● ●	● ●	● ●	●	Cultural Fit
D2C loses out to lucrative markets	●	●	● ●	●		●	● ●	Exceptional Customer Service From the Start
D2C adds work			●	●	●		●	
Online D2C Requires Investment	●	●	●	●				
High Consumer Expectations			●	●	●		●	

Overall, there exists today multiple drivers in the system with the potential to build enabling conditions and mitigate many of the leading challenges faced by D2C. This is evidence of a strong, durable system that is continuing to mature and progress.

More consumers shopping online is a powerful driver that can help to create the demand for critical infrastructure necessary for D2C to thrive—last mile delivery, new opportunities for companies focused on processing and fulfillment, and building popular acceptance for seafood through D2C channels. This driver can also help prove the business case, which makes investment in marketing more feasible. As more people shop online, there is a greater diversity of potential customers, which increases opportunities for introducing new species and products, and building a domestic market for seafood consumption.

The combination of **current consumer demands**—for authenticity, healthy products, and especially convenience—can help directly addresses several of the key barriers to D2C: 1) eco-conscious consumers are helping push for environmentally friendly packaging, and more local supply chains, rooted in local catch; 2) price-conscious consumers are forcing companies to innovate in efficiencies to continue to stay price competitive; 3) demand for same-day or next day delivery and desire for in-person or home delivery creates incentives for development projects that focus on digital and physical infrastructure, including last-mile delivery and fulfillment services. Expectations for personalized and superior customer service create demand for IT marketing and digital customer experience expertise, as well as for customized products that help fit local contexts.

Technologies that provide data for **consumer experience analytics**, create an invaluable data repository that can help address several barriers and contribute to establishing multiple enabling conditions. First, these technologies help prove and improve the ROI for marketing and create digital infrastructure that companies need to optimize their online D2C business. Building interest and loyalty in consumers can then pave the way for introducing new species and types of products—by having strong consumer data with which to iterate and find the win— with the potential to reinforce domestic markets. This loyalty also helps drive subscription D2C models, which then can help build reliable demand for fulfillment and IT support services in the system, including development of effective and efficient client management and support services.

Technologies that reinforce D2C models are driving down costs, making marketing more effective, and are part of the digital infrastructure that is needed for D2C to work. Especially for marketplace platforms and social media that helps connect communities and customers to D2C brands, these technologies build the conditions for success. This is one of the drivers that can help alleviate the burden of work on D2C actors, for example through automated customer response services, while still meeting high consumer expectations. **Innovations in packaging, processing equipment, and cold chain also** help increase efficiencies and relieve some of the workload for fishers and intermediaries operating D2C channels; these innovations also build integrity of the product, attracting investment and customers. Improved packaging can also make products more accessible to different markets in terms of type of preparation to match preferred method of delivery and cooking.

Efforts that increase **support for domestic markets** have the potential to directly create enabling conditions for D2C, including last-mile delivery, connections with community, and fulfillment services at regional and local scales. They also can help overcome two-thirds of the challenges, by helping

create robust markets for D2C companies. Finally, as a result of some of the other drivers (support for domestic markets, more consumers shopping online), last mile logistics are slowly getting better around the world. This is an especially important driver for Brand+ and Membership models that rely on home delivery across larger geographic areas and will help these brands to progress even further.

Across all D2C seafood models, the landscape continues to be ripe for opportunity, with larger system forces helping to reinforce these strategies. How these models will continue to spread and evolve depends in part on how quickly enabling conditions are built. Around the world, there is a patchwork of existing contexts, some of which make overcoming these challenges and building enabling conditions more or less difficult.

Impacts and Potential Outcomes for the Seafood Trade

The rapid increase of D2C channels in seafood, and its continued proliferation in various forms, brings up two pressing questions:

1. How have these D2C efforts affected the way seafood is bought and sold around the world?

2. What are the implications for food access, sustainability, and social responsibility of the sector?

PROSPECTS FOR LATIN AMERICA AND THE CARIBBEAN

The D2C seafood movement in Latin America and the Caribbean differs from North America, SE Asia, and EU regions in that we do not see many large Brand+ or Meal Kit/Subscription box models that deliver at national scales. One reason may be due to the relatively large distances that exist between (often) rural fishing communities and landing sites and more urban markets. Often, such as the case in Chile and Peru, artisanal and industrial products are landed and processed along the coast and exported from there, leaving little opportunity for that product to connect with the domestic market. And, based on our interviews, few of the processors/exporters in Chile or Peru seem to be turning to D2C approaches—despite having the capacity to process, freeze, and ship products.

Because product often needs to travel hundreds of miles over rudimentary roads to reach the nearest towns and cities (the exception is where coastal communities have become major tourism centers, such as La Paz), the current conditions make it difficult to meet consumer demand for convenience within the domestic market—especially same day or next day home delivery. Poor infrastructure combined with longer travel requirements makes for even more difficult cold chain and logistics, which may be hampering development of home delivery approaches.

What we do see, however, are Fishmonger 2.0 models that are fulfilling the logistics gap. Models such as SmartFish Inc (Mexico) and MiCaleta (Chile) began as B2B intermediaries, but have since launched small

shops and online stores that directly connect consumers with the products of fishers from domestic fishing communities. And in Brazil, Ohla o Peixe is employing a subscription-based CSF model to deliver artisanal fishers' catch to nearby city centers in the region of Bahia. These companies are taking on the logistics role, and providing new venues for consumers to receive product—in person and online. And where physical shops (or cold storage hubs) are set up, they can serve as fulfillment centers for home delivery.

Other challenges in Latin America include political instability and continued significant waves of COVID-19 outbreaks, which have hampered more grassroots efforts. That said, several drivers point towards potential for continued experimentation and growth of D2C models in this region:

1. Consumer trends in Latin America reflect those at the global scale. Consumers are turning to online shopping more and are looking for companies that they can trust to deliver safe, healthy products, that are not contributing to environmental harm, especially waste.[60]

2. In Mexico, small scale fishers have increasingly adopted social media for direct marketing and sales at local levels, and continue to do so. And social impact networks such as Innovación Azul in Mexico, and support from strong NGO community, provide the digital infrastructure and training to continued growth of this trend.

3. In Chile, an entrepreneurial culture includes accelerators and other support for small and medium enterprises to launch and gain traction; and a program sponsored by the government during COVID-19 supplied women in rural areas with cell phones, data, and training to help them with their businesses.[61]

4. In the Caribbean, UNDP-supported WiFetch is helping to create logistical and market solutions to connect consumers with all kinds of products, including local seafood.

These initiatives and existing drivers are a strong indication that D2C in the Latin American region—especially for Fishmonger and smaller Brand+ approaches—is poised for growth. A potential next evolution may be to learn from Brand+ models such as Aruna in Indonesia, which has similar challenges (dispersed, rural fishers, limited infrastructure) but through powerful technologies and supportive infrastructure, as managed to scale their D2C model. One thing to note is that Aruna's model initially started out as a B2B marketplace to build more robust and profitable markets for fishers—their D2C "Seafood by Aruna" branch launched only last year. There may be useful insights from a deeper dive into how and why this strategy has worked to date.

While D2C in Latin America continues to progress at slower and smaller scales, around the world, this is not the case. And this proliferation of business strategies and new companies is leaving its mark on the way seafood is bought and sold around the world.

60   Staff, Forbes. *"Las tendencias de consumo en Latinoamérica cambian con la pandemia."* Forbes Centroamérica • Información de negocios y estilo de vida para los líderes de Centroamérica y RD, 10 Mar. 2021.

61   Yubisay Mosqueda. *Mujeres Rurales y de La Pesca de Tarapacá Reciben Celulares Con Conexión a Internet.* Soychile.Cl. Accessed 19 Jan. 2022.

RIPPLE EFFECTS OF D2C

The following themes emerged from our analysis as potential disruptions or ripple effects that seafood actors are noticing as they continue to engage in the trade.

Digital transformation of the trade

One of the major benefits of digital D2C models is that they generate lots and lots of detailed consumer data. This data is a source of insight that, if analyzed and applied, can help D2C companies drive sales. A notoriously paper-based sector, the seafood industry has historically been slow to adopt more modern systems for trade (modernization of fishing vessels is a different story). The proliferation of digital data systems that connect consumers with D2C seafood companies is helping to drive digital transformation of the sector. The implications of this are many, including:

- Greater efficiencies and better inventory management, which can help reduce waste
- Increased insight into consumer behavior and thus, increased capacity to meet consumer needs and drive consumption
- Better data quality and availability for monitoring food safety, fraud, and illegal fish
- Lower barriers to entry for new technology, for example, electronic catch documentation and traceability schemes
- For informal parts of the sector, electronic data builds a digital identity that can facilitate more formal trade and access to finance.

All four models have strategies that rely on digital data systems, whether it is social media for marketing or e-commerce websites for trade, and the impact appears across small scale and industrial fisheries. For example, in Mexico and the Caribbean, the use of social media by fishers to generate direct sales via Facebook Marketplace or WhatsApp (Grassroots models) has helped increase their interest in other technologies—such as digital payment systems. Use of these systems helps often-informal fishers to build their "digital identity," which can improve their capacity to access relief funds as well as helps build their credit to access more formal financing.

For larger-scale efforts, the ability to effectively match supply with demand, via online marketplaces supported by strong inventory management, can help buffer complex supply chains from disruptions—companies can more easily shift their sourcing among different fulfillment centers to alleviate bottlenecks and decrease costs.

"The idea that D2C home delivery model is more expensive is antiquated. Most [D2C] have one or two fulfillment centers. We are expanding not just regional but to local carriers-electric bicycles, etc. That is long term plan and lots of data to drive inventory at that scale... we need to shift with education sustainability and efficiency in supply chain so that prices can go down."—Aaron Kallenberg, Founder and CEO, Wild Alaskan Company[62]

62   Seafood Source. *Seafood Expo North America Reconnect.*
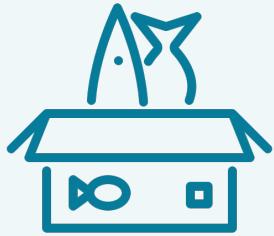
More demand for processing

Creating products for individual home consumption used to be the realm of retailers and restaurants. As more seafood enterprises, from fishing cooperatives to international distributors, start to sell direct, there is increased demand for processing capacity. And, because D2C models tend to prioritize customer preferences, this processing capacity needs to be flexible and diverse: individual portions, more types of cuts, value-add products, and of course, more high-quality, frozen products. We see diversification of fishers and distributors into the processing world, as they work to create the products that their customers demand and meet existing marketing opportunities. Existing processors, in turn, are having to expand to meet these new demands, not only from the D2C companies, but also from traditional retailers who have launched D2C services.

"We are now doing a lot more processing. Seems to be more competition for people wanting that custom processor. By being one of first in the market and having that relationship from before has helped secure that spot for us. Others are challenged to get fish processed." –
North American Seafood Distributor

Competition for consumers and possibly, product

The entrance of producers and mid-chain players into the market, plus new D2C channels within grocery, and digitally native companies, mean more buyers are vying for consumer attention. Competition online is pushing companies who wish to be successful in D2C to invest more in marketing strategies and product offerings that can set themselves apart. This could mean fewer dollars available for other types of growth or maintenance activities. In addition, as the hotel, restaurant and catering (HORECA) sector reopens, the competition for consumers—and supply—will only heighten. Fishers engaged in Grassroot D2C efforts may simply opt to sell their product, often for higher prices, to hotels and restaurants—especially in regions where tourism plays an important role in the economy (such as Southern Europe and the Caribbean). For Fishmonger D2C, they will have to work harder to match or beat the prices the HORECA sector may be offering in order to secure supplies for the same local catch.

Diversification and potential to increase seafood consumption

One benefit to the competition for product may be an increase in the diversity of species that are traded. As competition increases for popular species, D2C companies have an opportunity to educate and introduce new species to consumers, perhaps at lower cost—especially within Membership and Fishmonger models. This could help alleviate pressure on some of the more traditional stocks and provide new markets for lower valued species, helping boost fisher incomes. For Brand+ models, the crowded online marketplace is creating the opportunity for niche D2C companies to come online. For example, the Spanish processor and distributor, SolPolpo now offers online D2C for its octopus—and only octopus—products.

But diversification is also occurring due to the nature of CSFs, which specifically market the day's catch—whatever that may be, as well as seafood boxes that can promote packages that combine favorites with new, and interesting options. The high-touch customer service and idea of "digital fishmonger" that is baked into many of the Membership and Brand+ D2C companies includes this emphasis on education and awareness-building; their products often also include recipe cards. For the Fishmonger model, D2C companies are using the in-person opportunities to entice customers to try new things with samples and even cooking classes and of course, conversation. And it is not just about new species; the diversification also includes new product forms, such as helping customers overcome the bad reputation of frozen—something we heard from Fishmonger 2.0 companies in the USA, Latin America, and SE Asia.

> *"My favorite part: education piece. People learn because I tell them, not in a sales-y way, but telling them why frozen is OK even though not fresh; the difference in Omega 3 in sockeye from king. Tons of education. It is organic way to educate about seafood industry- that benefits all companies...That is hard to do on a website- easier when I'm there just chatting."*
> *—D2C Fishmonger, USA*
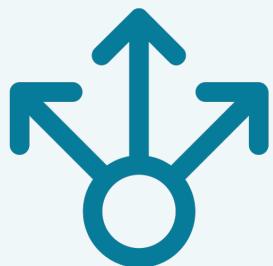
Access and equity opportunities

Advancements in technology systems that support D2C models—from the recently launched Facebook Shops to e-commerce giant Shopify—means that even small players can have bigger platforms and get noticed. At the same time, logistics, especially last-mile delivery with reliable cold chain, has improved dramatically in response to larger e-commerce trends. This means that it is now possible to bring seafood to inland locations where it previously has been limited. D2C models (except Grassroots), are well-positioned to take advantage of these larger drivers to move more fish to new areas while keeping costs down.

In the small-scale fisheries space, multiple businesses are proving that fishers can receive more for their fish by reducing the number of mid-chain actors, and creating opportunities for direct sales to consumers—via home delivery and in-store options.[63] At the same time, efficiencies gained in logistics—in part due to better

---

63   Abalobi. *"Fish With A Social & Ecological Story – Rethinking the Way We Eat Fish."* Fish With A Story, Accessed 19 Oct. 2021; *"The Largest Integrated Fisheries Commerce In Indonesia - Aruna."* Aruna, Accessed 1 Nov. 2021; *"SmartFish Pesca Sustentable."* Smart Fish, Accessed 1 Nov. 2021; *Mi Caleta – La Unión hace la Pesca*. Accessed 1 Nov. 2021.

data analytics, in part due to trends towards increasingly localized, micro-fulfillment models—mean the ship-ping costs of direct-to-consumer models may likely start to come down. Combined with interest in diversifying to under-valued species, and domestic products, these drivers could increase access to affordable, nutritious seafood farther from the coast.

The small shop and pop-up markets that are the hallmark of the Fishmonger 2.0 model, and a trend in D2C overall, offer the potential for bringing seafood into "food deserts" via low-cost, small footprint outlets scattered throughout urban centers. They also provide a way for locals to receive product at the lowest cost—sans ship-ping. Efforts to supply last mile logistics via electric bikes and bicycles also helps keep costs down. These poten-tials align with existing research on the benefits of alternative seafood networks for food security and resiliency.[64]

Finally, in terms of access, the Fishmonger 2.0 and Membership (CSF) models provide that human-contact that some individuals still desire, especially the older generation. By creating opportunities for direct connection, these D2C businesses are bridging the gap between those that are fully comfortable in a digital environment and those who still want to see, smell, and touch their fish—and talk about it—before buying.

"As Jeffrey and Angeline [founders of Dish The Fish in Singapore] introduced their modern methods of displaying, packaging and selling fish, they had to help their customers adapt too. 'It took quite a bit of explaining and educating initially, but the time taken to convert many of the older generation of shoppers was not as long or tough as expected.' Angeline credits sincerity and commitment that got the elderly on board with them."[65]

64   Stoll, Joshua S., et al. *"Alternative Seafood Networks during COVID-19: Implications for Resilience and Sustainability."* Frontiers in Sustainable Food Systems, Mar. 2021.

65   Alanna Tan. *"Meet The New-Age Fishmongers - This S'porean Couple Uses Tech To 'Scale' Their Business."* Vulcan Post, 20 June 2018.

Transparency in the mid-chain

As more mid-chain companies adopt direct-to-consumer sales channels, they are creating an opportunity for greater transparency—and public scrutiny—in the middle of the seafood supply chain. Historically the most opaque part of con-voluted global trade networks, mid-chain actors are normally not public-facing entities. This, combined with the fact that many are private, family-owned busi-nesses, means that there have been few levers to push when it comes to best practice. But D2C changes that in several ways. Consumer pressure—mostly via social media reviews and complaints—is now possible. And, because consumers are increasingly interested in where their seafood comes from, D2C companies are having to adopt better traceability systems and become more transparent in terms of their practices. This provides a new opportunity to leverage public pres-sure for more sustainable and responsible seafood.

A potential downside, however, is that more and more companies are claiming they are delivering product "boat to plate" or "straight from the fisher." Some of them are. But for others, these products are still moving through several steps in the supply chain, including processors, and wholesalers, who may or may not be inte-grated with the D2C company. There is potential for "greenwashing" the reputation of D2C in seafood.

In some cases, larger distributors or wholesalers who are taking on D2C, may be taking away an opportunity for a small scale fisher to provide that service and benefit from the value capture. That said, intermediaries, who provide a necessary aggregating, processing,and cold chain service are often needed to move seafood at scale.

The Value-Prop of Sustainable, Responsible Seafood Is Going Up
The marketplace for online sales is increasingly crowded, and D2C companies across all sectors will have to spend more on advertising and work harder to differentiate themselves. Sustainability and social responsibility are two ways that we see brands doing just that. And trends in consumer demand and the regulatory environment show that this approach may prove to be a smart business decision (in addition to being the ethically correct one).

A growing number of seafood consumers care about sustainability. Younger consumers in the USA are concerned about ocean health issues, including ocean plastic waste and chemical pollution, which impact their seafood choices.[66] The Norwegian Seafood Council's 2020 annual survey found that 72 percent of consumers express that it is more important now than before that brands behave more sustainably. In Europe, consumer distrust of seafood is driving greater demand for assurances about product origin, which in turn, is driving demand for sustainability certifications. Add to this increasing pressure on companies to adhere to stricter regulations around sustainable seafood in major markets, including the US, EU, and Japan, and it is clear that sustainability and social responsibility are valuable (and marketable) aspects of a company's brand.

The technology, marketing, and communication systems at the heart of D2C also allow seafood companies to highlight the stories of their fishers, their processes, and their company. When these stories align with consumer *and* regulatory demands, then the decision to invest in best practices just makes sense.

---

66   Changing Tastes. *Go Fish: The Great American Reconsideration of Our Protein Choices*. May 2020.

Brands with personalities

The seafood industry is not known as a particularly fashion-forward sector in terms of branding. But this is starting to change as online competition increases for new generations of tech-savvy, brand-conscious consumers—Gen Z and Millennials especially. Online D2C seafood companies need to distinguish themselves not just on quality, price, and selection, but also on their authenticity, personalized services, and unique story. Creating a fresh, recognizable, relatable brand that reflects the core values of the company—and the target consumer—is part of the new normal.

"We picked [colors] opposite of the norm. We want to stand out and appeal to family, easy, convenient, light and bright." –US D2C Seafood Distributor

Conclusions

Companies looking to launch a new D2C business or add a D2C sales channel to their existing business certainly have their work cut out for them, nomatter which model they choose. However, there are now enough players in the space that the system is starting to mature—there are many new tools and resources designed to support food and beverage, and even seafood-specific, D2C enterprises. This kind of supportive infrastructure helps to lower the barrier of entry to D2C for other companies that may not be quite as pioneering or are more risk averse. As more companies join the fray, two things are happening:

1. Different D2C models are having proof of concept, attracting more interest, especially from investors;

2. Competition is driving continued innovation, and development of even more ancillary, support industries, which in turn, help more companies adopt D2C models.

In considering the future of D2C in seafood, experts and seafood actors noted that consolidation is likely to occur, with big players such as Amazon taking over fulfillment. Especially when it comes to food, most people want to shop for all their grocery needs at once, so buying fish AND produce all in one go (convenience is king). However, we are also seeing strong signs of continued innovation in the space, which indicates that the system is still on the growth and maturation stage of the innovation curve: while some models are proven, there are still new opportunities to fill.

Real Good Fish's Site Host option is an example of continued experimentation with the D2C model that reinforces the sense of community and helps address issues of cost and environmental impact. Another example is tech company Daily Catch,[67] which is experimenting with providing small scale producers (fishers and farmers) with the sensor and digital tools they need to not only run their business, but be able to tell their stories in order to drive customer interest and engagement in online marketplaces—increasing potential for both B2B and D2C opportunities for the fisher.

As D2C models in seafood continue to evolve, we are also seeing emergence of "cross-over" or "hybrid" approaches. For example, Kroger's Home Chef is not only providing home delivery, but also makes meal kits for purchase in their retail outlets—again, providing more convenience and more options for their customers. Overall, this is leading to enormous growth in their meal kit line.[68] And speaking of meal kits—the example of Restaurant Meal Kits as a very recent innovation within the restaurant D2C business shows how new approaches continue to surface within the D2C food space all the time.

When thinking about innovation adoption curves, the shift to online seafood shopping and direct sales has certainly hit a maturity phase—widespread uptake by consumers and proliferation of options in terms of back-end technologies and logistics to support home delivery continuing to improve. The existing, system-level drivers (many of them linked to the overall e-commerce boom) are creating improved enabling conditions and reduced barriers for seafood D2C moving forward. The early pioneers have paved the way for increased experimentation and adoption of D2C across the seafood sector, and we can expect these models to continue to evolve and scale in the near future.

---

67   Matt Morris. Daily Catch – *The Hidden Story Behind Our Food* – The Impact. 2 Aug. 2021.

68   Packaged Facts. *"Packaged Facts Analyst Comments on Home Chef Hitting the $1B Mark as the Meal Kit Industry Continues to Benefit from Pandemic Eating Trends."* Perishable News, 27 Oct. 2021.

APPENDIX 1: Google Search Trends Analysis

To help assess the landscape of online seafood sales, we looked across seven countries to see how patterns in online searches for seafood may have shifted over the past 18 months (Figure A 1-7). We analyzed six terms for their frequency on Google Search, for the years 2017-2019, 2020, and 2021: food, seafood, restaurant, seafood restaurant, food delivery, and seafood delivery. We used regionally appropriate equivalents of these terms, verified by native language speakers, for each country. Where the frequency of a term was too low, we omitted the graph. Significant differences exist among countries with regard to usage of Google as a search engine, thus cross country comparisons may be limited. However, temporal trends in frequency of these terms within a country are free from such bias and can point to consumer shifts in interest or interaction with seafood over the course of the pandemic (see White et al., 2020 for more details).
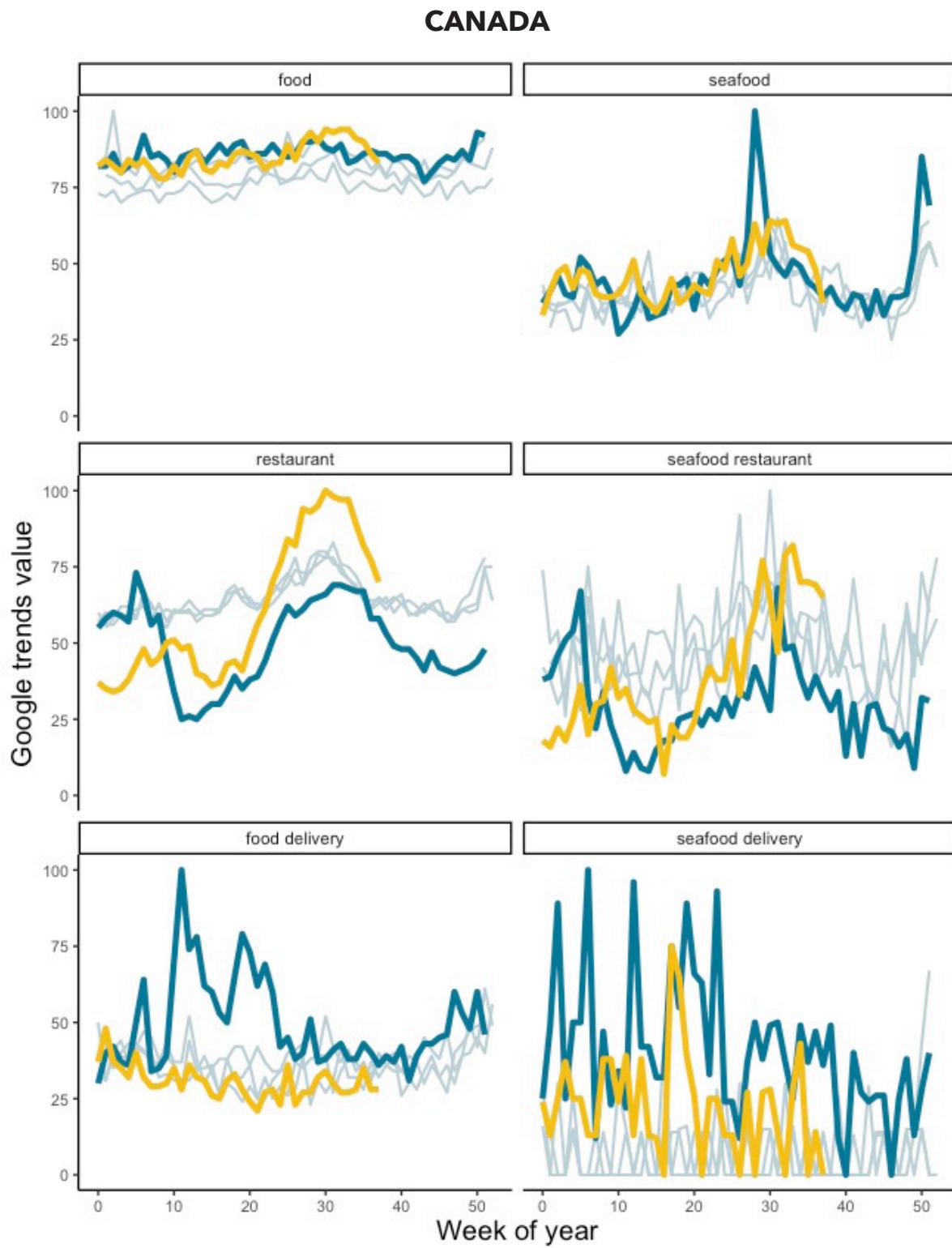
CANADA

Figure A1. Trends for Google searches in Canada using "food," "seafood," "restaurant," "seafood restaurant," "food delivery," and "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).
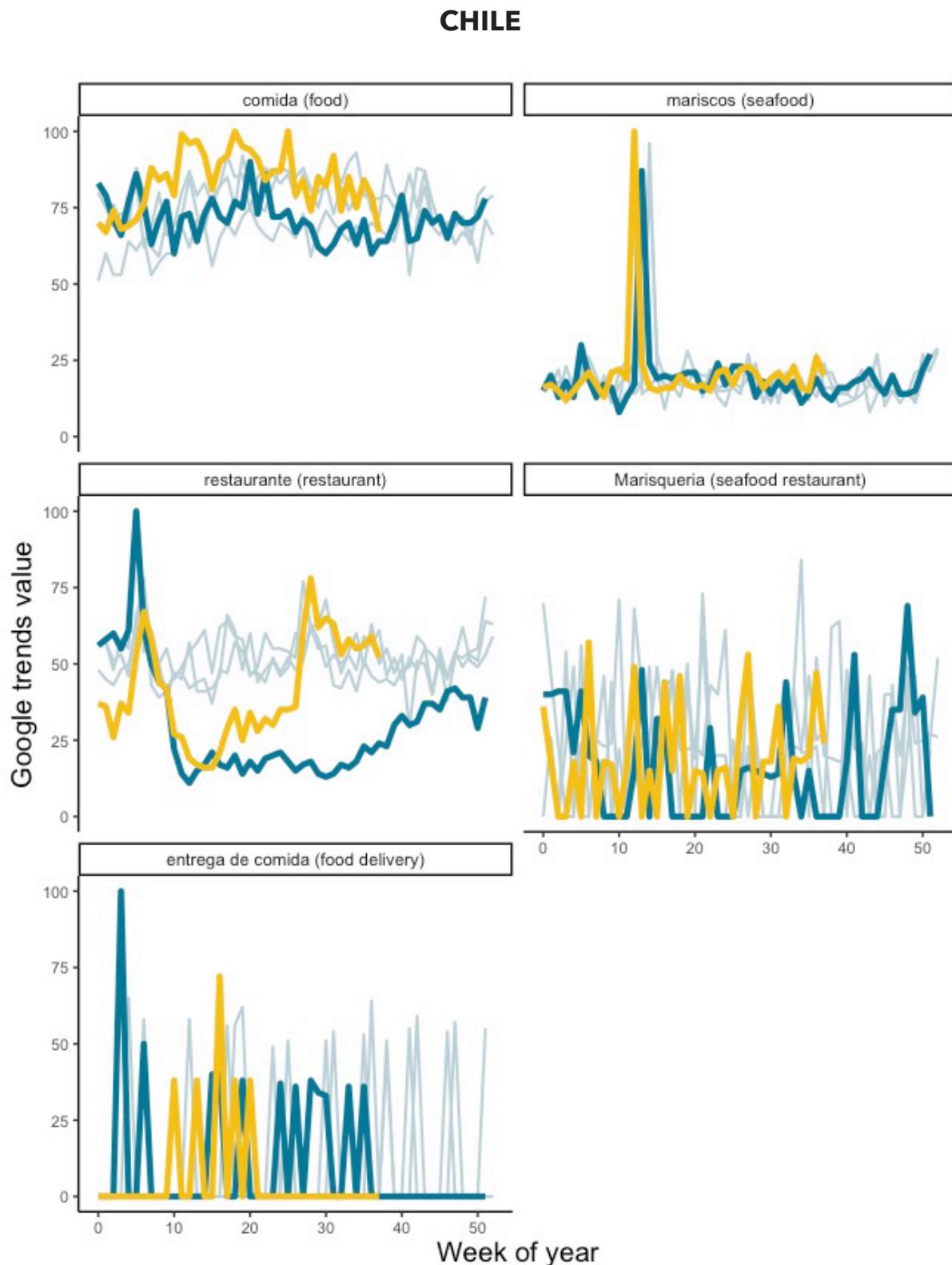
CHILE

*Figure A2 .Trends for Google searches in Chile using "food," "seafood," "restaurant," "seafood restaurant," "food delivery." Not enough data for "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).*
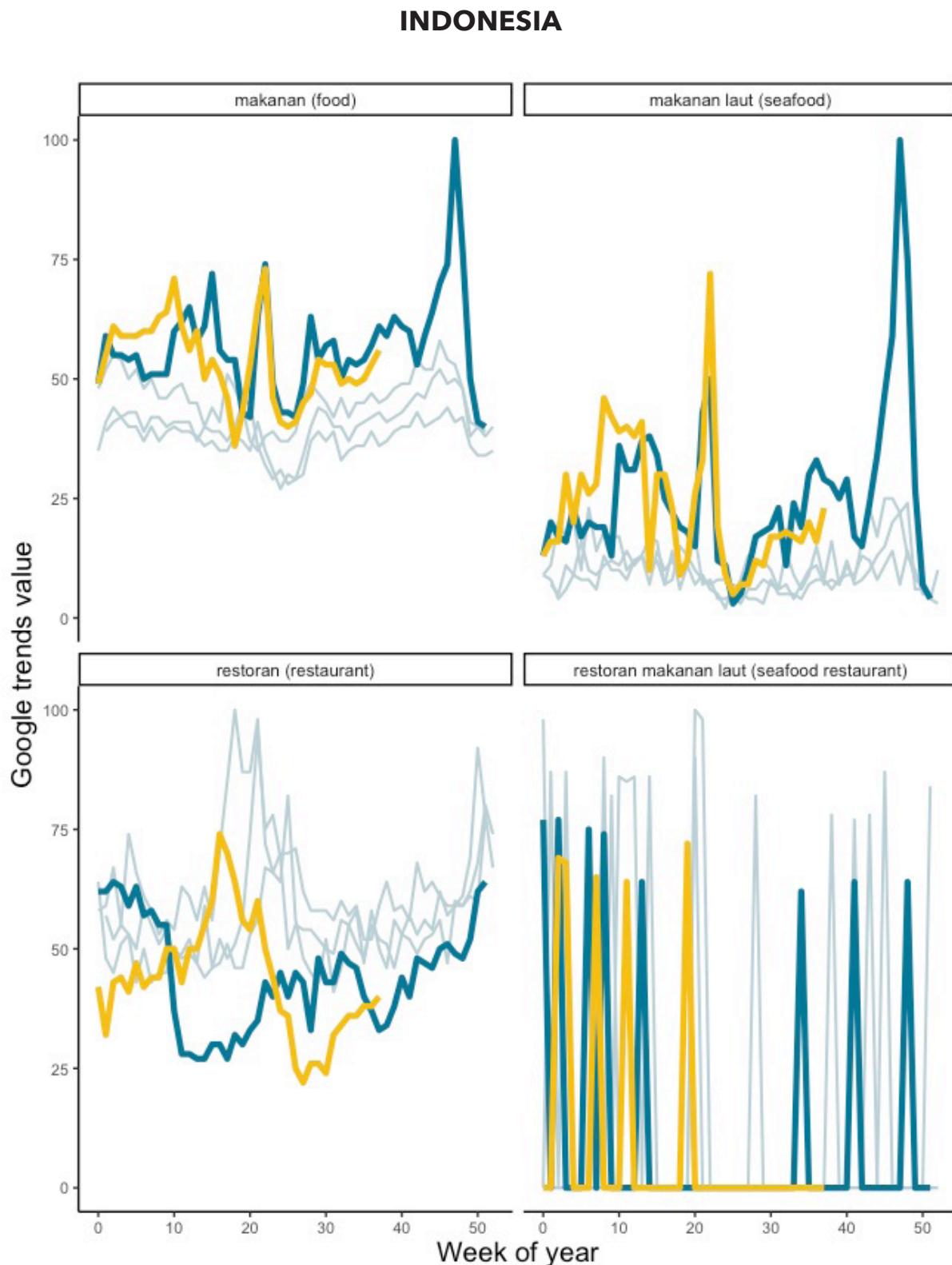
INDONESIA

Figure A3. Trends for Google searches in Indonesia using "food," "seafood," "restaurant," "seafood restaurant." Not enough data for "food delivery" or "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).

MEXICO
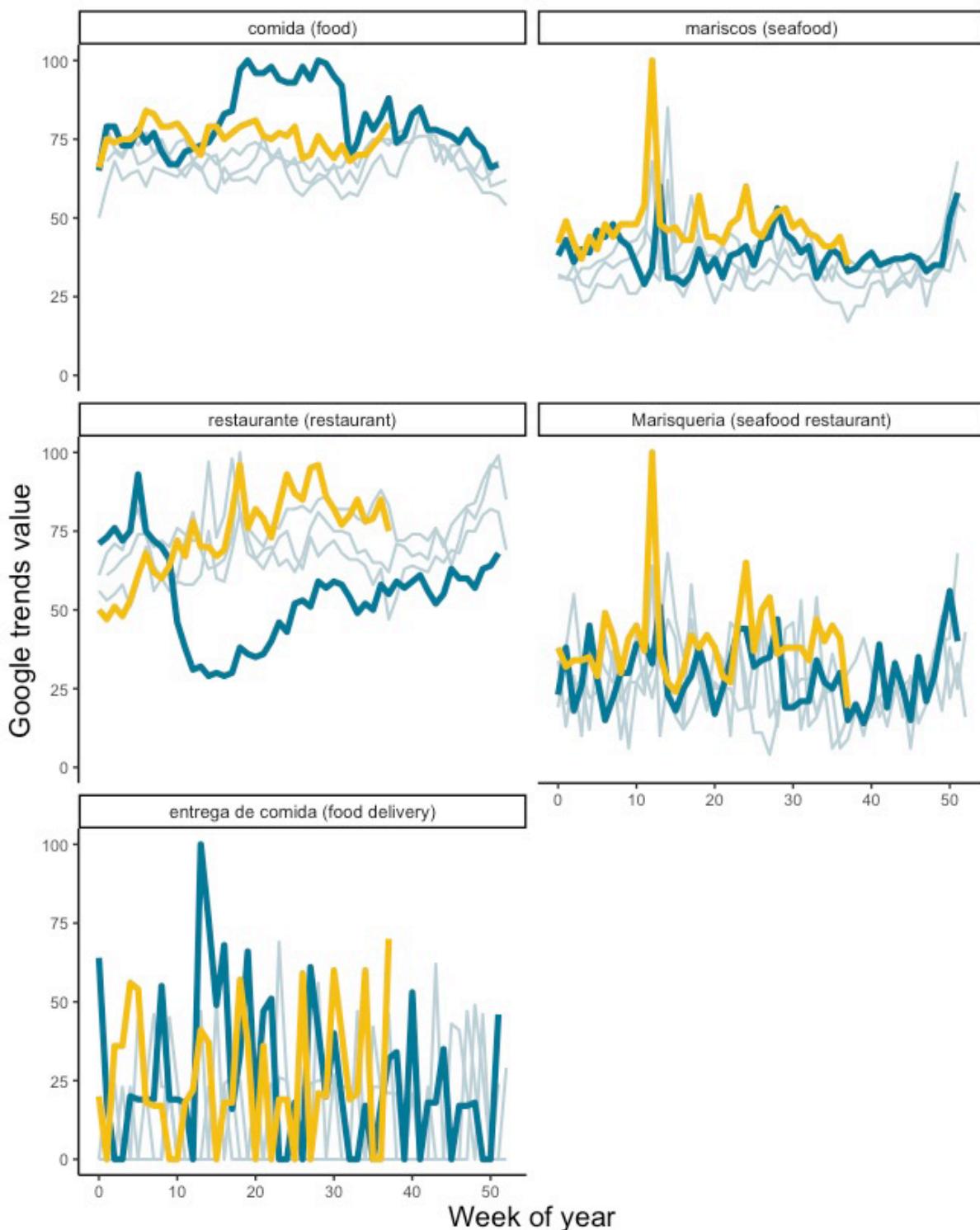
Figure A4. Trends for Google searches in Mexico using "food," "seafood," "restaurant," "seafood restaurant," "food delivery." Not enough data for "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).

PERU
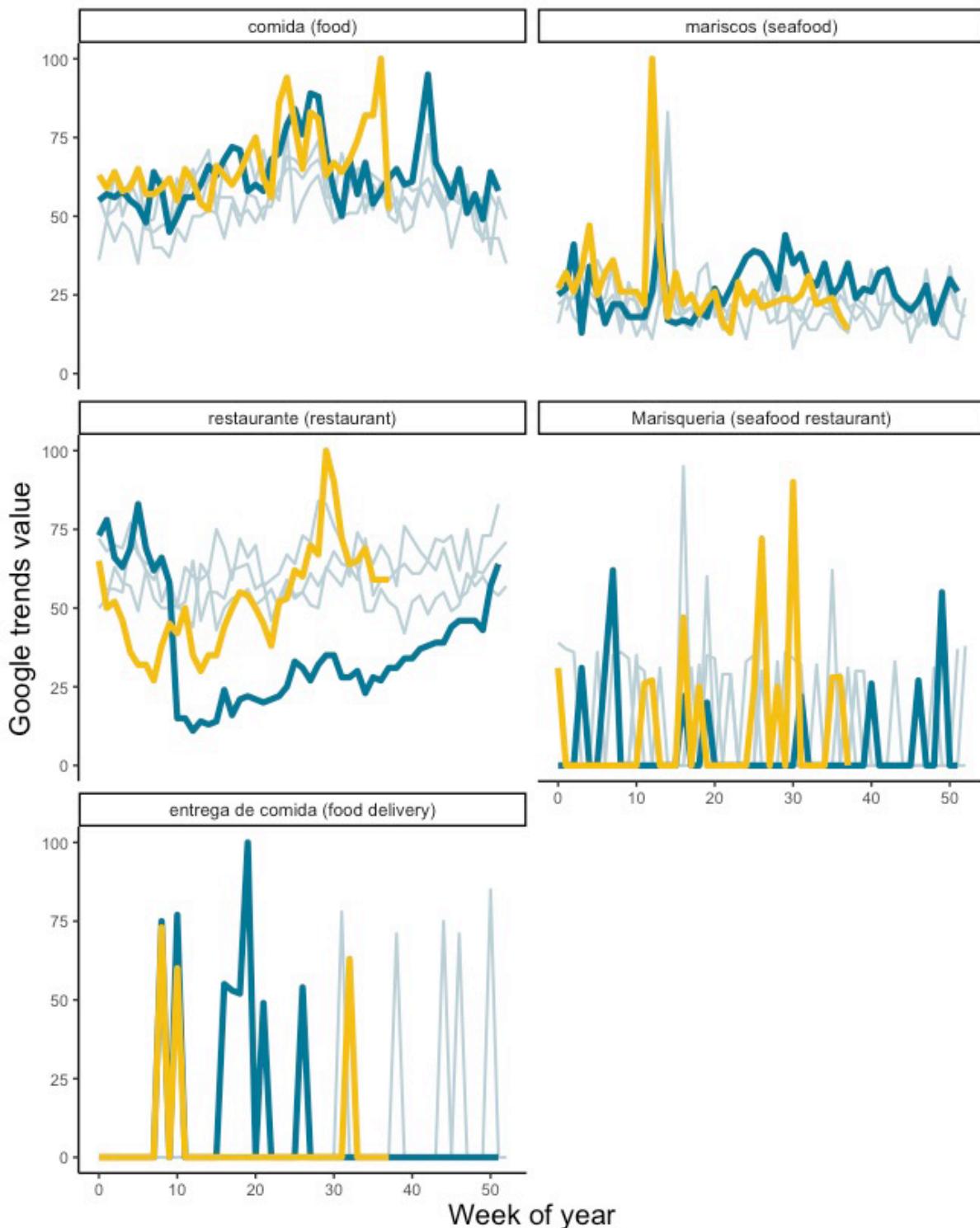
Figure A5. Trends for Google searches in Peru using "food," "seafood," "restaurant," "seafood restaurant," "food delivery." Not enough data for "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).

SPAIN
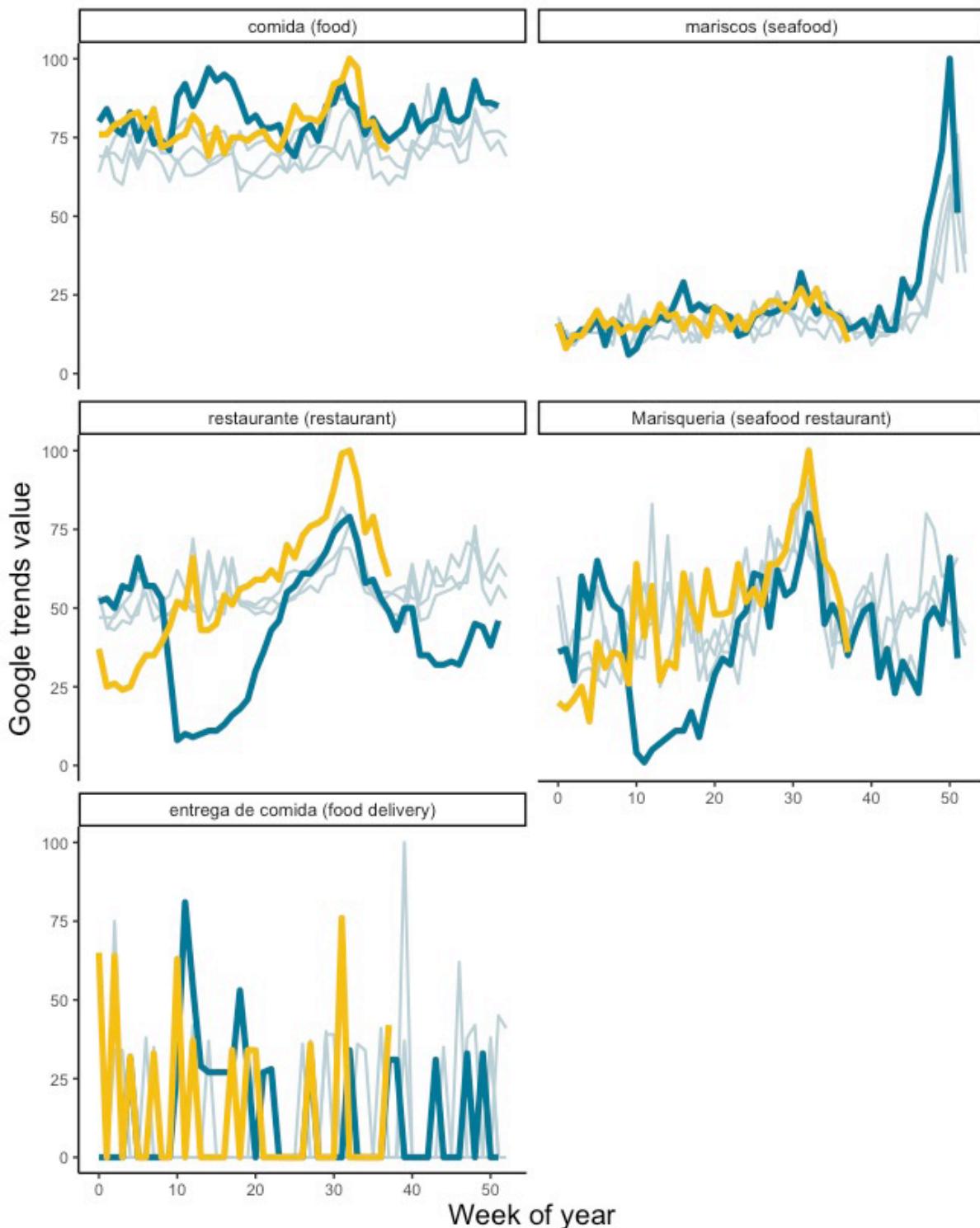
Figure A6. Trends for Google searches in Spain using "food," "seafood," "restaurant," "seafood restaurant," "food delivery." Not enough data for "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).

UNITED STATES
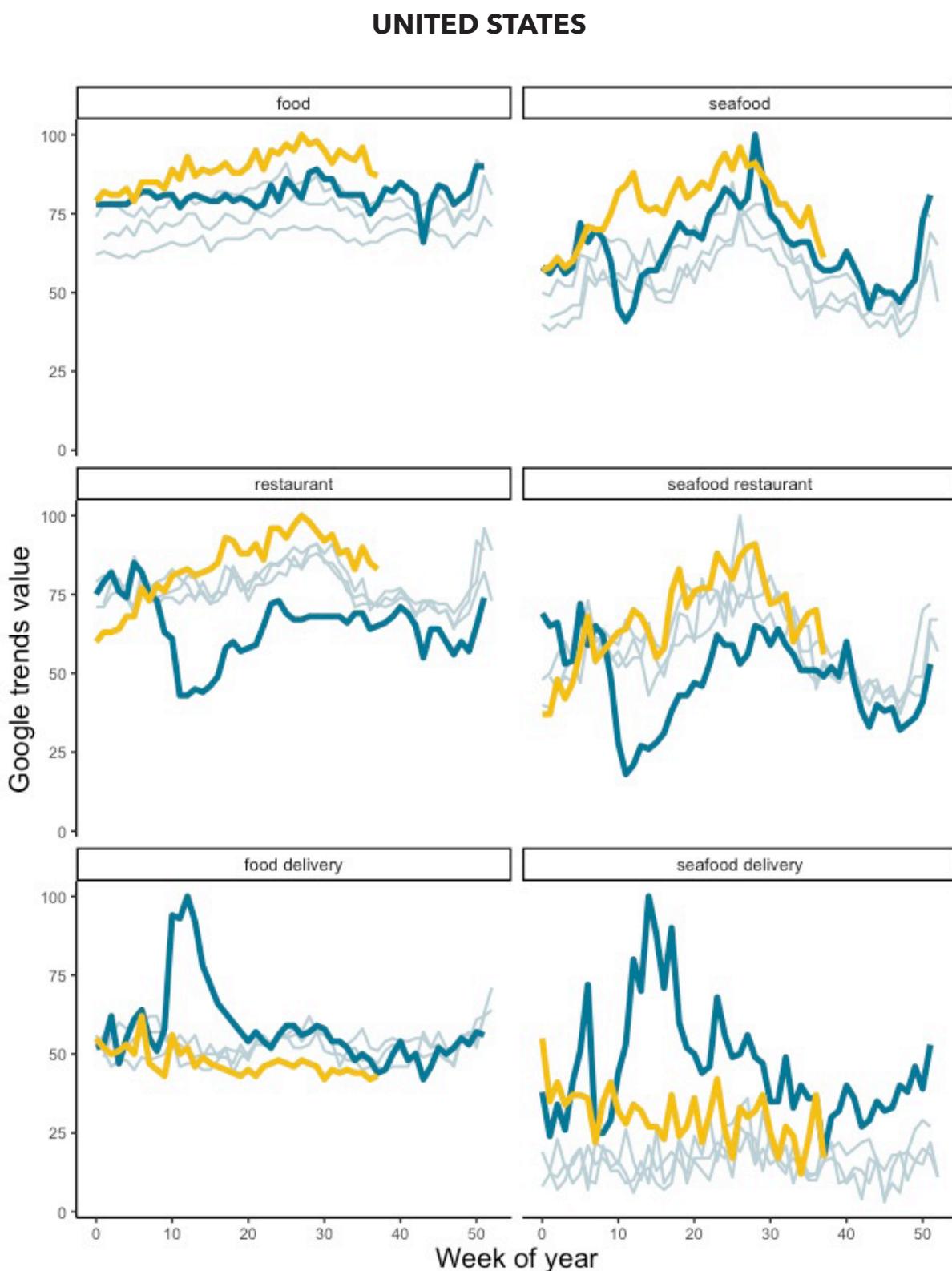
Figure A7. Trends for Google searches in USA using "food," "seafood," "restaurant," "seafood restaurant," "food delivery,"and "seafood delivery." Data for 2021 (Yellow), 2020 (Blue), and 2017-2019 (Light blue).