



# Local food 2.0: How do regional, intermediated, food value chains affect stakeholder learning? A case study of a community-supported fishery (CSF) program

Gabriel Cumming<sup>1,2</sup> · Kristin Hunter-Thomson<sup>3,4</sup> · Talia Young<sup>5,6</sup> 

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## Abstract

Local and regional food initiatives—new ways of connecting food suppliers with nearby consumers—have proliferated in recent decades in the USA and beyond. One manifestation of this local food movement is the emergence of community-supported fishery (CSF) programs: alternative seafood distribution arrangements with shortened, traceable supply chains. Such alternative food value chains are seen as having the potential to benefit multiple stakeholders, including suppliers, customers, and intermediaries; however, the nature of those benefits—and the degree to which they foster connection among stakeholders—needs to be better understood. In particular, regional, intermediated value chains are less well understood than those that involve direct sales from harvester to consumer. This case study examines an intermediated, regional CSF (Fishadelphia) intentionally designed to connect culturally dissimilar stakeholders: New Jersey seafood suppliers and diverse consumers in Philadelphia. The project is coordinated by high school students from the Philadelphia neighborhoods served by the project. The paper examines the perspectives of three participant groups—suppliers, students, and customers—and compares motivations for taking part, values derived from doing so, and awareness of/interest in other stakeholders. Input was solicited from all active members of each participant group. Data were collected at multiple points during Fishadelphia's first year of operations using a combination of surveys and individual/group interviews. We found that views of other stakeholders in this value chain varied widely within and across groups; these views showed some evidence of being affected by direct face-to-face contact. Our findings suggest that interplay among three types of values—self-interested, altruistic, and relational—may be important in motivating stakeholders to initiate and sustain participation in alternative value chains. This analysis furthers understanding of varied benefits that alternative food value chains can yield for different stakeholders, and illuminates opportunities for, and limitations to, the development of connection among value chain stakeholders.

**Keywords** Fishadelphia · Community-supported fishery (CSF) · Direct marketing · Value chain · Local food · Regional food

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✉ Talia Young  
taliay@scarletmail.rutgers.edu

<sup>1</sup> Working Landscapes, 108C South Main Street,  
Warrenton, NC 27589, USA

<sup>2</sup> Community Voice Consulting, 108C South Main Street,  
Warrenton, NC 27589, USA

<sup>3</sup> Department of Human Ecology, Rutgers University, 55 Dudley Road,  
New Brunswick, NJ 08901, USA

<sup>4</sup> Dataspire Education & Evaluation LLC, 8 Robert Rd,  
Princeton, NJ 08540, USA

<sup>5</sup> Department of Ecology & Evolutionary Biology, Princeton  
University, Princeton, NJ 08544, USA

<sup>6</sup> Department of Geography, Rutgers University, 54 Joyce Kilmer  
Avenue, Piscataway, NJ 08854, USA

## Introduction

Seafood is an important component of the global food system. Worldwide, fishing and aquaculture now employ over 50 million people, and fish accounts for nearly a fifth of all animal protein consumed (Food and Agriculture Organization of the United Nations 2018). In the USA, the seafood industry as a whole generates 1.2 million jobs and generates nearly \$150 billion in sales. Seafood is also a widely and globally traded commodity, especially in the USA: in 2016, the USA exported nearly 1.3 million metric tons of edible seafood (at a value of \$5 billion) while simultaneously importing over 2.5 million metric tons (valued at \$19.5 billion) (National Marine Fisheries Service 2017).

Food systems have become increasingly industrialized, globalized, and consolidated over the past century (Bonanno et al. 1994; OECD 2010), and the seafood industry is no exception. This trend has expanded markets, but it also presents challenges for sustainable marine management (Berkes et al. 2006; Taylor et al. 2007; Crona et al. 2016), harvester livelihoods, and community cohesion (Neis 2005; Jentoft 2012).

In part as a response to global food system consolidation, local and/or alternative food movements have blossomed over the last few decades (Grauerholz and Owens 2015). In the agricultural arena, a prominent expression of this movement is an increase in direct marketing arrangements between harvesters and consumers, including farmers' markets and community-supported agriculture (CSA) programs. CSA customers typically pay a sum up front in exchange for receiving regular shares of produce over the growing season (Roth 1999; Hinrichs 2000; Brown and Miller 2008).

More recently, analogous programs have emerged in the seafood sector: community-supported fishery (CSF) programs (Campbell et al. 2014; Olson et al. 2014). The first CSF started in Port Clyde, ME, in 2007, with now nearly 40 in operation across the USA and Canada, and more opening every year (Godwin et al. 2017). CSFs were initially inspired by the success and structure of CSAs (Snyder and St. Martin 2015), and have developed over time to include a variety of seafood distribution arrangements with shortened supply chains and a focus on product traceability: some involve advance payment from customers for regular deliveries of seafood, while others arrange direct sales from harvesters to customers (Bolton et al. 2016; Godwin et al. 2017; Witter and Stoll 2017). These alternative seafood distribution systems, like their agricultural counterparts, fall under the broad category of "value chains": supply chains (networks which move products from production to consumption) that aim not just to maximize profit but also to provide benefits to all stakeholders (Dey et al. 2015).

## Understanding participants' motivations

Since participation in alternative food value chains like CSAs and CSFs represents a conscious choice, a body of research

has emerged to examine the motivations of these projects' stakeholders. Most of these studies focus on either farmers/harvesters, consumers, or both. Since many CSFs are organized by someone other than the harvesters themselves, some CSF research has also focused on the motivations of those organizers (Bolton 2016, Witter and Stoll 2017). The literature on these alternative food chains reveals an array of reasons for participation, which we see as falling into three broad categories: *self-interested*, *altruistic*, and *relational*. Each is discussed below.

Research suggests that both suppliers and consumers participate in alternative food chains at least in part for *self-interested* reasons. The self-interested reasons cited for supplier participation are primarily economic: they see CSAs/CSFs as a way to get access to a new market and command a better price for their products by circumventing conventional supply chains (Bolton et al. 2016; Hinrichs 2015; Morgan et al. 2018; Ostrom 2007; Stoll et al. 2015; Witter and Stoll 2017; Worden 2004). Their self-interest is not expressed solely in monetary terms; however, they see supplying these alternative markets as a way of sustaining their independent livelihoods and improving their quality of life (Samoggia et al. 2019; Snyder and St. Martin 2015; Witter and Stoll 2017). For seafood harvesters in particular, another self-interested motivation identified in the literature is what in this paper we term *pride*: the opportunity to promote the quality of their own products and practices, as well as those of their industry, and to be recognized for their work (Bolton et al. 2016; Witter and Stoll 2017). Farmers are likely also motivated by the opportunity for greater recognition, but this factor does not emerge as distinctly from the CSA literature as it does in the CSF literature. In contrast to suppliers, consumers' self-interested motivations center on improved access to high-quality, nutritious food and associated psychological benefits (Campbell et al. 2014; Ostrom 2007; Zepeda et al. 2013). Conversely, self-interest also plays a primary role in customer departures from CSAs—dissatisfaction with the product characteristics (e.g., lack of variety, choice) is the leading complaint (Ostrom 2007; Galt et al. 2019).

In addition to self-interest, CSA/CSF suppliers and consumers frequently indicate *altruistic* reasons for participating: motivations to benefit others, rather than themselves. For suppliers, this includes social goals such as improving consumers' access to healthy food, educating the public about farming/fishing (a motivation that intersects with the pride noted above), supporting small-scale operators versus the consolidated ag/food industry, and supporting farming/fishing communities. Though they are generally prioritized lower, suppliers also espouse environmental goals, primarily related to promoting sustainable farming/fishing practices. Consumers also cite both social and environmental goals, e.g., supporting small producers and sustainable harvest practices (Bolton et al. 2016; Campbell et al. 2014; Morgan et al.

2018; Samoggia et al. 2019; Ostrom 2007; Snyder and St. Martin 2015; Witter and Stoll 2017; Worden 2004).

Previous studies also provide evidence of participants' *relational* motivations, which we see as a distinct category. Hinrichs (2000) explored the relational dimensions of direct agricultural markets (farmers' markets, CSAs) through the concept of "embeddedness"—the degree to which markets are characterized by "social connection, reciprocity, and trust" (p. 296). In her study of CSA grower motivations, Worden (2004) references the similar concept of an "associative economy" characterized by "direct, informed human relationships between producer and consumer in the exchange of goods and services" (p. 324). Studies of both CSAs (Morgan et al. 2018, Ostrom 2007, Zepeda et al. 2013) and CSFs (Bolton et al. 2016; Campbell et al. 2014; Stoll et al. 2015) identify similar motivation. Though it is associated with support for community building, which can certainly be characterized as an altruistic goal, we see relational motivation as different from altruism because it reflects a personal desire for relationships with other stakeholders, versus a desire to simply benefit those stakeholders (and the world). In other words, participants' altruistic goals might be achieved whether or not they felt personally connected to other participants, but relational goals depend on that sense of connection. Relational motivations are also distinct from self-interested motivations because desired benefits accrue both to self and others and are realized only through relationship.

### Local food 2.0: beyond direct marketing

Much of the research on local/alternative food enterprises has focused on direct marketing, in which consumers purchase directly from harvesters. However, more recent work has also identified the importance of regional-scale, intermediated sourcing within the local/alternative food movement (Low and Vogel 2011). Direct marketing systems and harvesters often do not have the capacity to supply the rapidly increasing consumer demand for "local" food, and operating at regional scales may allow harvesters to maintain flexibility while also optimizing efficiency, resilience, and sustainability (Stevenson and Pirog 2008; Hardesty et al. 2014; Tewari et al. 2018); (Kneafsey 2010; Bloom and Hinrichs 2011; Palmer et al. 2017). Lamine (2015) points out that simply equating direct producer-consumer connections and short supply chains with sustainability, ignores the roles that other food system participants (e.g., intermediaries), and more "complex interdependencies" can play in transitioning toward sustainability (p. 42).

If hyper-local, face-to-face, direct marketing by harvester to consumer is "Local Food 1.0," we have dubbed the intermediated, regional-scale food system as "Local Food 2.0," and we assert that advancing understanding of such value chains is crucial. However, research suggests that both

consumers and institutions struggle to understand the concept and ramifications of a "regional" food system (Palmer et al. 2017).

In this study, we examine one CSF that delivers regionally harvested seafood from harvester to consumer via a limited set of intermediaries. We were interested in whether the values ascribed to "local food"—characteristically associated with direct marketing—would also apply to this type of regional, intermediated venture. Since the various stakeholders in the value chain were not necessarily in direct contact with one another, we wanted to know whether their perspectives on the project—and each other—differed.

In particular, we were interested in understanding how the relational aspects of alternative food ventures were manifested in an intermediated value chain. Since the logistics of a CSF like Fishadelphia (the subject of this paper) prevent many of the venture's stakeholders from encountering each other directly, we sought to understand the extent to which those stakeholders would nonetheless seek and establish ties with one another. Stoll and colleagues (Stoll et al. 2015) examined these relational dimensions of another CSF, Walking Fish, through the lens of social capital, arguing that the CSF created opportunities for new connections both within and across participating groups of stakeholders, i.e., bonding and bridging capital. Their study focused on two groups of CSF stakeholders: harvesters and customers. Recognizing the vital role of intermediaries in this CSF, as well as a subset of other CSFs, we have extended our inquiry to also encompass those stakeholders who comprise the value chain between the boat and the table, including processors (those who fillet the fish), distributors (who deliver product), and retailers.

### Description of case study

Fishadelphia (<https://www.fishadelphia.com>) is a new CSF (founded in fall 2017) with a focus on connecting regional seafood harvesters and processors with economically and culturally diverse consumers in the Mid-Atlantic region of the USA. The project is based at a 7–12 grade school in Philadelphia, PA, USA. The day-to-day operations of the program are coordinated by a group of students at the school, who meet 3 hours per week after school from September through June. Fishadelphia purchases fish and shellfish on a biweekly basis from harvesters, docks, and processors in New Jersey, brings it to Philadelphia, and sets up a distribution site at the school. Customers subscribe for the program in advance or on a week-to-week basis, and they come to pick up their seafood at the school. With each pickup, customers are offered information about who harvested, processed, and delivered the seafood, as well as some ecological facts about the species and a simple recipe. Fishadelphia also offers educational activities for its customers and students, including trips to docks

or shellfish farms where some of their seafood is landed/harvested.

Fishadelphia's focus on diverse consumers, with simultaneous goals of increasing access among low-income consumers to high-quality protein and expanding domestic markets for seafood harvesters, makes Fishadelphia unique in the growing landscape of North American CSFs. Efforts to reach low-income consumers have been increasing among local/alternative agriculture programs, including farmers' markets and CSA programs, with dual justifications of increasing both fresh food access and also stability for harvesters through public food assistance programs (Guthman et al. 2006; Andreatta et al. 2008; Markowitz 2010). But comparable initiatives remain limited among local/alternative seafood programs.

Fishadelphia was founded in part based on the idea that consumers of color represent a strong potential market for domestic seafood, as many American communities of color have strong cultural ties to seafood (National Environmental Justice Advisory Council 2002). Consumer research suggests that African-American consumers spend 70%, Latino consumers 122%, and Asian-American consumers 147% (!) more money on seafood than does the US general market (National Environmental Justice Advisory Council 2002; Nielsen 2013, 2015a, 2015b). Students participating in Fishadelphia are central to reaching these customers; because the students are themselves members of Philadelphia's diverse ethnic communities, they have the cultural and linguistic competence to recruit and support customers from these populations.

## Purpose of the research study

In this paper, we examined the initial effects of participating in the first year of Fishadelphia's CSF on three stakeholder groups: customers, suppliers, and students. We aimed to answer the following questions:

1. *What were the motivations of stakeholders to join the Fishadelphia CSF, and what kinds of value(s) did they derive from participating?*
2. *To what degree has participation in the CSF fostered relationships—characterized by learning, personal connection, or the desire for learning/connection—among value chain stakeholders?*

The study populations are small, as detailed below; therefore, our analyses are not intended to yield broadly generalizable findings about impacts of CSFs or other alternative, intermediated food value chain initiatives on their participants. Instead, this case study aims to use stakeholder perspectives on Fishadelphia to illuminate opportunities and challenges

that developers of alternative, intermediated food value chains may want to consider.

## Methods

To address our research questions, we undertook a mixed-method research approach aimed at understanding stakeholders' experiences of the Fishadelphia project. Data were collected, using a combination of written surveys and oral semi-structured interviews, from three stakeholder populations: (1) Fishadelphia seafood suppliers, (2) the high school students who coordinate the project, and (3) Fishadelphia customers. Our goal was to survey all program participants in each of the three study populations; response rates varied by group. All data collection instruments (surveys and interview guides) can be found in Supporting Materials 2. The specific study design for each population is described below.

### Stakeholders involved in project

#### Suppliers

Fishadelphia relies on multiple suppliers to provide seafood (fish and shellfish) to its customers, including harvesters, docks (businesses that purchase, unload, and pack seafood from boats, and sell that seafood to other intermediaries, as well as providing shoreside infrastructure such as docking space, gas, and ice), processors, and distributors. Data were collected from all suppliers working with Fishadelphia. Methods included semi-structured interviews conducted prior to participating in the program and a survey of those actively participating during the program. Suppliers were asked about their motivations for participating in Fishadelphia, value derived from participation, and their interest in other project stakeholders. Suppliers actively participating in the program were also asked to describe the Fishadelphia supply chain.

#### Students

Students in grades 7–12 at Mastery Charter Thomas Campus (Philadelphia, PA, USA) serve as intermediaries in the Fishadelphia supply chain: they run the day-to-day operations of the project, including distributing seafood to customers at biweekly pickups. For this study, we collected data from students who participated in the project from 2017 through 2019. Data were collected from students through surveys (administered before and after project seasons), as well as group and individual interviews conducted after program participation. Students were asked about their motivations for and values derived from participating in Fishadelphia; they were also asked to rate their own knowledge about the origin of the seafood they eat on a 5-point Likert scale. A subset of surveys



asked about interest in other stakeholders in the supply chain. Students who had participated in the program for at least one semester were also asked to describe the Fishadelphia supply chain. In addition to these topic areas, the surveys collected demographic data on the students, including language(s) spoken at home, self-identified race(s), and highest educational level attained by parents/guardians.

### Customers

The third key stakeholder group for Fishadelphia is the customers who receive fish through the CSF. We administered pre- and post-season surveys to customers who purchased fish from Fishadelphia in 2018 and 2019. These surveys were aimed at understanding customers' motivations for participating in the project and the value they derived from doing so, as well as gauging customers' perceptions of the project. After participating in the program for at least one season, respondents were additionally asked to describe the steps of the Fishadelphia supply chain as they understood it. A subset of surveys asked customers about their interest in other stakeholders involved in Fishadelphia. The surveys also asked customers a few demographic questions, including language(s) spoken at home, self-identified race(s), and highest educational level attained.

### Interview analysis

Individual and group interviews with suppliers and students were transcribed and then coded and analyzed using the NVivo qualitative analysis software. A combination of deductive and inductive coding (Bernard 2002) was used to identify themes across multiple interviews. Deductive codes were derived from the interview guides, enabling initial classification of data into a uniform set of topics across subject populations. Inductive coding was then used to identify themes that emerged from the data. By triangulating among the interview coding, survey response data, and the CSF/CSA literature, we then derived categorizations of stakeholders' motivations for participation and their views of one another, as described further below. Exemplar statements from the interviews were then selected to illustrate the categories that we identified.

### Other data analysis

#### Motivations and benefits

Data on motivations for and values derived from participating were aggregated from both surveys and interviews to assess the distribution of responses to the research questions among each study population. Since questions about motivations to participate and values derived from participating were asked both before and after Fishadelphia's first full season, those

results were also compared longitudinally for each population. Because the number of respondents to the surveys varied over the course of the project, response distributions are presented as percentages to facilitate comparison.

In order to better compare responses across stakeholder groups, responses from both time periods were grouped into five categories. These categories were identified inductively from our project data and correspond to types of motivation reflected in the literature (Table 1).

### Supply chain descriptions

Each project participant's description of the supply chain was scored according to whether it included each of the following stakeholders: harvesters, docks, processors, distributors, retailers, and customers. Explicit reference to the ocean was also noted. Using these scores, we then quantified the awareness of each step in the supply chain within respondent populations by calculating the percentage of respondents who mentioned each step. We also compared supply chain descriptions completed by students who had recently attended a field trip to a dock with those from students who did not attend that field trip.

### Self-reported knowledge

Student self-reported knowledge about the origin of their seafood was assessed using a Likert scale and compared longitudinally using median values (Sullivan and Artino 2013).

### Interest in other stakeholders

Each participant was asked to indicate one of the following levels of interest in other stakeholders in the project: "I already know as much as I need to know," "I want to know who they are," "I want to learn more about them," or "I want to get to know them." Stakeholders listed included the following: harvesters, dockworkers, processors (people who fillet the fish), distributors, project coordinators, students, and customers. In our question to suppliers, we grouped harvesters, dockworkers, processors, and distributors as a single group. Because the levels of interest did not comprise a formal scale, we used the mode (most common) response from each stakeholder group in our analysis.

### Ethics statement

All research instruments (surveys and interview guides) used in this study were approved by the Institutional Review Board (IRB) at Princeton University.

**Table 1** Categories for motivations for and values derived from participating in the Fishadelphia CSF project

Category	Description	Examples	Representative supporting literature
Instrumental	How I personally benefit from participation	Income, skills/knowledge gained	Campbell et al. 2014, Ostrom 2007, Samoggia et al. 2019, Snyder and St. Martin 2015
Pride	How my participation benefits others' views of me and others like me	Sharing the story of my seafood business with customers	Bolton et al. 2016, Witter and Stoll 2017
Altruistic (social)	How my participation benefits society	Supporting the local economy	Witter and Stoll 2017, Ostrom 2007
Altruistic (environmental)	How my participation benefits the environment	Purchasing sustainably harvested seafood	Campbell et al. 2014, Ostrom 2007
Relational	Benefits I derive from connection with other participants	Interacting with suppliers at pickup times, learning about other participants' lived experiences	Campbell et al. 2014, Hinrichs 2000, Worden 2004

## Results

### Sample sizes and demographics

We collected data from a total of 8 suppliers (100%), 26 students (87% of all students who attended more than once), and 76 customers (78%). Sample sizes for each analysis are shown in Table S1.

We did not collect demographic data from suppliers. Of the students participating in Fishadelphia, 50% (13/26) identified as Asian, 15% as Black/African-American, 15% as Hispanic/Latino, 8% (2/26) as white, and 8% (2/26) as more than one race (Table S2). Also among the students, 73% (19/26) of respondents spoke at least one language in addition to or other than English at home: 23% (6/26) spoke Spanish, 12% (3/26) Mandarin Chinese, 12% (3/26) Khmer (Cambodian), 8% (2/26) Arabic, 8% (2/26) Vietnamese, and 4% (1 student) each spoke combinations of Burmese/Tedim Chin, Burmese/Karen, and Urdu/Pashto/Hindi. For 28% (7/26) of students, their parents' highest level of education was completing high school, while 28% (7/26) indicated their parents attended some or completed college.

Among customer respondents, 45% (25/56) identified as white, 23% (13/56) as Asian, 20% (11/56) as Black, 11% (6/56) as more than one race, and 2% (1/56) as Hispanic/Latino (Table S2). Because the survey asked about the household, customer respondents who indicated more than one race might have identified as multi-racial individuals, coming from multi-racial households, or both. Also among customers, 28% of 61 respondents indicated that they spoke at least one language in addition to or other than English at home: 7% (4/61) of respondents each spoke Spanish, Mandarin Chinese, and Burmese/Tedim Chin at home, while 3% (2/61) spoke Vietnamese and 2% (1/61) each spoke Cantonese Chinese, Gujarati, Japanese, Albanian, and Tagalog and Malaysian. In contrast with the student population, 84% of customers indicated having completed college and/or graduate school. Because the survey instruments were administered in English, the

customer respondents (total  $n = 76$ ) were disproportionately English-speaking in comparison with the overall customer population (total customer population = 125 from 2017–2019, with 26% (33/125) preferring to conduct transactions in a language other than English). Furthermore, because we asked demographic questions on the pre-survey and not the post-survey, customer demographics reflect only pre-survey respondents.

### Motivations to participate and values derived from participation

When Fishadelphia suppliers, students, and customers first joined the project, we asked them to indicate why they chose to participate. After they had been participating for a minimum of one season, we then asked them what aspects of participation were valuable to them, in essence giving us a sense of why they may choose to stay a part of the project.

Using the five categories of responses by participants (instrumental, pride, altruistic (social), altruistic (environmental), and relational), we were able to compare the drivers to participate and values from participating among suppliers, students, and customers (Fig. 1, see Table S3 for exemplar responses by category).

Overall, instrumental reasons dominated both suppliers' and students' reasons for joining the program, while customers were motivated by a combination of instrumental and altruistic reasons. Suppliers and students identified different values gained from participating compared with reasons for joining, whereas customers reported similar reasons before and after their participation. The importance of instrumental value decreased for both suppliers and students after participating in the program, while altruistic (social) and relational values increased. The role of pride changed in opposite ways; however, for suppliers, it was more important initially than it was after participating, while for students, the reverse was true. Additional details about motivations and values derived are described by stakeholder group below.



**Fig. 1** Stakeholder motivations for joining the community seafood program (top row) and values derived from participating (bottom row), as reported by suppliers, students, and consumers. The width of each

colored segment indicates the number of respondents who indicated at least one reason in that category, normalized across total bar width for ease of interpretation

### Suppliers

All of the suppliers reported joining Fishadelphia because they saw it as a way of reaching new customers (instrumental). They wanted to reach customers in order to sell seafood, but nearly as important was the desire to educate customers about their business and their industry (pride): 5/6 suppliers expressed pride in their work in the initial interview. This motivation is expressed in the following excerpt from one supplier involved in the project:

We're really proud of our product as far as the oysters that we harvest. So any time that people show interest in it and they show interest in our product, they show interest in our family and our history, I'm totally on board to kind of open that door and kind of help educate people about oysters, about the oysters that grow in south Jersey specifically and then our family story.

The suppliers saw themselves not only as merchants but as ambassadors for a profession that they are proud of and that they feel is misunderstood. A smaller proportion of suppliers (1/6) were also motivated altruistically by the positive social impacts of the project—specifically, the desire to support the project's student coordinators:

One of the huge attractions to the Fishadelphia program for myself personally is the fact that... the organization of it is being done by a lot of youth. I'm a father of two boys and since they were young children I've been very involved in Cub Scouts and youth baseball and local art federations with the youth programs and stuff. So the fact that it was not only something that's important to me like local sustainable wild-caught seafood but the fact that it's involving young people who are the future of that product.

After having participated in Fishadelphia, instrumental and pride values remained important benefits gained from participating in the project, with two-thirds of suppliers citing values in these categories. Altruistic (social) and relational aspects of the project gained in importance to suppliers after participating; half of suppliers indicated that they derived

altruistic (social) and relational benefits from participating (as opposed to 1 and 0 respectively in the pre-interview). Suppliers typically expressed multiple values at once in their responses. For example, the following supplier statements about the value of the project illustrate intersections between relational, instrumental, pride, and altruistic (social) values:

1. Being able to connect and educate our customers is very important to our business and [we] want to support the same in other companies.
2. Employment, some profit, and enjoy being part of the supply chain between the sea and the city.

### Students

Like suppliers, the leading reasons students initially joined Fishadelphia were instrumental: nearly 70% of students (18/26) indicated instrumental reasons for joining the program on the pre-survey, such as benefiting themselves by gaining first-hand business experience and/or learning about topics that interested them. To a lesser degree, they were also motivated by an interest in helping others: 15% of students (4/26) indicated a socially altruistic reason for participating, such as helping their community. In interviews, students reiterated these two primary motivations for participation: benefiting themselves through experience/education and benefiting others through public service. These priorities are illustrated by the following interview excerpts:

1. I joined this club because, well, first of all, I definitely want to be richer than Donald Trump. But I also want to start a business in my future, so I know how to start off.
2. I joined because I want to help other people to afford fish.

After the CSF's first year, 6 out of 7 students completing the program evaluation were committed to continuing to be part of Fishadelphia. The student reasons for valuing the project after participating had evolved substantially. Instrumental values, though still expressed, were a smaller proportion of responses (2/7), while values derived from the relational aspects of the project and a sense of pride had become far more

important, with more than 40% (3/7) of students indicating the importance of relationships and pride in their work. This change reflects the fact that the students experienced working together to manage seafood distribution positively. The resulting sense of accomplishment is expressed in this excerpt from a student follow-up interview:

I think the most valuable part is us just being able, [as] children, being able to run this entire business for high-quality fish for very cheap, which is basically just our mission. I think that's the best value, that we actually can complete our goal, our mission, and we're just happy about that.

For students, Fishadelphia became a relational experience that they had with each other. This theme is reflected in another student's assessment:

Getting to work with such incredible people that come from such a variety of background—different race, different sexuality, different grades and stuff like that. And balancing our knowledge...basically getting to work as a team is what I valued the most.

### Customers

Compared with responses from suppliers and students, the reasons that customers joined Fishadelphia were much more similar to the values that they derived from participating. Both before and after participating, many customers valued both the instrumental (85% before and 100% after) and altruistic (58% before and 90% after for altruistic (environmental), and 88% before and 100% after for altruistic (social)) benefits of the project. The relational aspect of the project was less prominent for customers than for the other stakeholder groups but was still a component of both their reported motivation for (33%, 22/66 respondents) and value derived (38%, 11/29 respondents) from participating. Another finding, however, suggests a greater importance for the relational aspect of the project than is indicated in Fig. 1: 61% (40/66) of pre-survey respondents indicated that they joined Fishadelphia at least in part because they knew someone involved—a project coordinator, student, or fellow customer.

In explaining their reasons for recommending the Fishadelphia program to others, several customers gave reasons that spanned multiple motivation categories, as this customer response illustrates:

I think there is room for improvement but the product is very good, I love that the program highlights the role of each person who takes part in the production chain, and

supporting local, sustainable food, local jobs, and young entrepreneurial development is all very important.

The relative similarity of the pre- and post-participation responses from customers may be partially attributable to the difference in the data collection instrument: unlike the other two groups, who were asked open-ended questions, customers were responding to provided options in a closed-ended question. However, the relative consistency of customers' views was corroborated by other findings, as discussed below.

Like the students, most active customers (70%) indicated that they wanted to continue participating in Fishadelphia. When deciding whether to stay with the program or leave, 60% of customers gave instrumental reasons (e.g., "The timing of pick-up was tough for my schedule"), 20% gave altruistic (social) reasons (e.g., "helping the community"), 13% gave relational reasons (e.g., "meeting folks along the way that bring this to my kitchen"), 3% gave altruistic (environmental) reasons (e.g., "love sustainably caught fish"), and 3% gave pride-related reasons (e.g., "we would if we thought our participation made a difference").

### Exploring the relational dimension of the supply chain: supply chain stakeholders' views of each other

We further explored the *relational* dimension of stakeholders' motivations by seeking to understand each stakeholder group's views of other stakeholders within the Fishadelphia supply chain after participating in the program.

In order to understand Fishadelphia stakeholders' familiarity with other participants in the project's supply chain, we asked suppliers, students, and customers (after they had participated in the program) to describe/diagram the steps that Fishadelphia fish takes to get from origin to consumption. As Fig. 2 illustrates, awareness of the supply chain and other stakeholders varied across stakeholder groups.

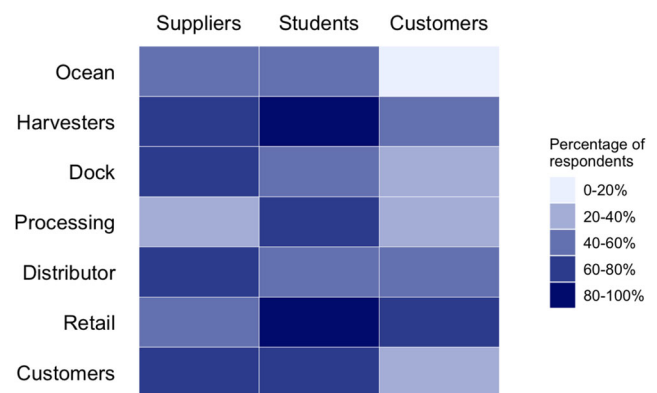
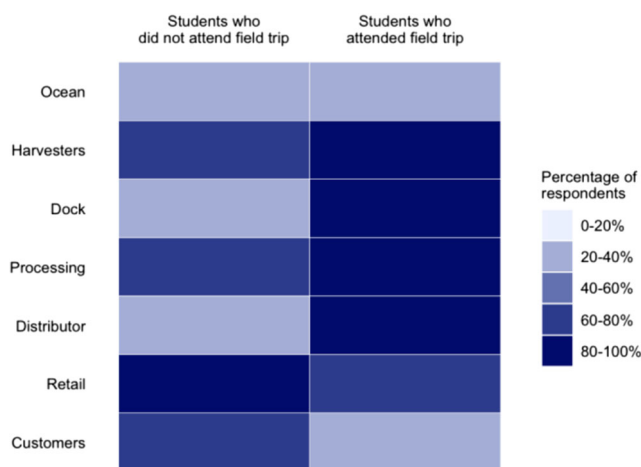


Fig. 2 Awareness of other stakeholders in the supply chain after program participation. Shading indicates percentage range of stakeholders (in columns) who included each step in the supply chain (rows) in their descriptions of the supply chain after participating in the program



Suppliers were most focused on four groups, with 3/4 including harvesters/fishers, docks, distributors, and customers in their descriptions of the supply chain. Indeed, they were the respondent group most likely to include distributors in their supply chain descriptions. Like suppliers, many students demonstrated awareness of multiple supplier roles (harvesters (90%, 9/10), dockworkers (40%, 4/10), processors (60%, 6/10), distributors (40%, 4/10)), with especially consistent attention focused on harvesters, and also retail (90%, 9/10)—the step in the supply chain that the students themselves carry out. Customers demonstrated less supply chain awareness overall than the other stakeholder groups. The step in the supply chain that customers were most likely to include was retail (64%, 16/25), followed by distributors and harvesters (52%, 13/25 each). Also, out of any stakeholder group, the customers were least likely to explicitly mention the ends of the supply chain: the ocean and the customers (i.e., themselves).

Stakeholders differed in their degree of direct exposure to different parts of the supply chain, and there is evidence that this difference in direct exposure affected their ability to identify supply chain stakeholders. For example, some students had the opportunity to go on a field trip to the dock where some of Fishadelphia's seafood is sourced, where they met the dock manager and learned about the operation. Figure 3 compares the supply chain descriptions of students who participated in the field trip with those who did not. The results indicate stronger awareness of supplier stakeholders (harvesters, dockworkers, processors, distributors) among field trip participants; non-participants were more focused on the retail link in the chain.



**Fig. 3** Effect of field trip on awareness of other stakeholders in the supply chain for students. Shading indicates percentage range of groups of students (in columns) who included each step in the supply chain (rows) in their descriptions of the supply chain, for those who did not and did attend a field trip to visit the dock ( $n = 3$  in each group)

Student participants were also asked to self-report their knowledge about seafood supply chains before and after participating in Fishadelphia. Specifically, they were asked to rate their understanding of where the seafood they consume was caught, who caught it, and how it got them. After participating, the students' self-reported knowledge about all three topics increased (see Fig. 4).

Customers also were asked to self-report whether their knowledge of other supply chain stakeholders had increased. More than half of customers reported learning more about harvesters, and between a third and a half reported learning more about processors, distributors, fellow customers, and students (Table S4).

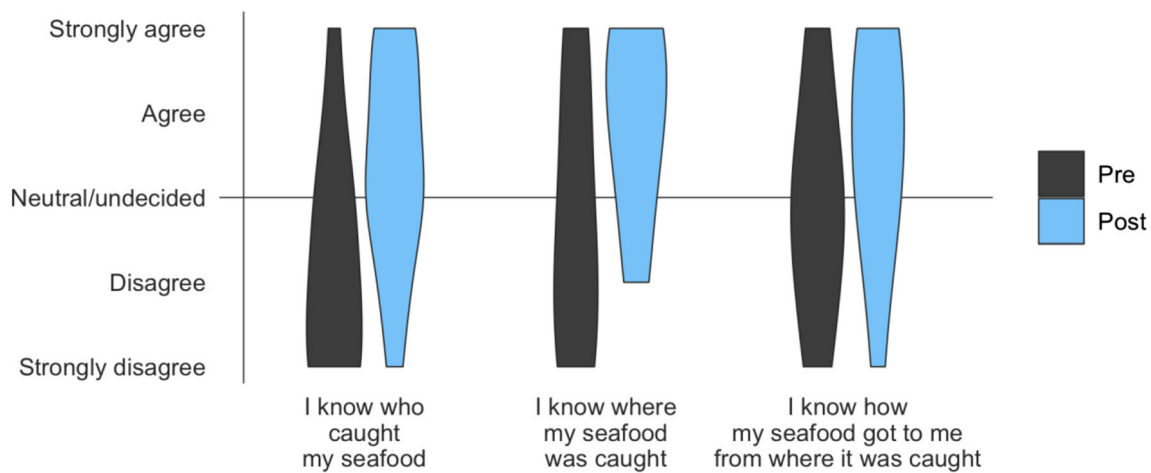
### Levels of interest in other stakeholders

In addition to gauging supply chain stakeholders' awareness of each other after participating in the program, we also measured their interest in each other. Suppliers, students, and customers were asked to indicate in post-surveys which of four different types of expressed interest (see Fig. 5) they had in other stakeholder groups (they could choose as many as they wanted). Though these types of interest do not comprise a formal scale, we see them as indicating increasing levels of interest.

Overall, the most commonly selected level of expressed interest was the desire to *know who other stakeholders in the supply chain were* (10 intersections). Somewhat less prevalent was a stronger level of interest: the desire to *learn more about another stakeholder group* (7 intersections). Suppliers were interested in learning more about the students, while students were interested in learning more about distributors. Customers were most interested in learning more about the project's coordinators and the students. With regard to harvesters, students were divided: half wanted to *get to know them* while half felt that they *already knew enough about them*. Responses for each category of expressed interest are detailed below.

**Desire for further awareness of other stakeholders** Half of the suppliers indicated interest in knowing who other suppliers and customers were. However, they did not indicate interest knowing more about who the students and project coordinators were. Customers indicated greatest interest in knowing the identities of the dock and processing workers. Even this desire was only expressed by about a third of customers, however. Finally, students also expressed greatest desire to know who dockworkers and processors were, with majorities of student respondents expressing this desire.

**Desire to learn more about other stakeholders** Beyond wanting to know who different stakeholders are, we also asked stakeholders about their interest in learning more about other stakeholders involved in the supply chain (Fig. 5). Who each stakeholder group was interested in "learning more about"



**Fig. 4** Student self-reported knowledge about seafood supply chains. Sample size for pre-survey was 25, and sample size for post-survey was 13; all 13 students who completed the post-survey also completed the pre-survey

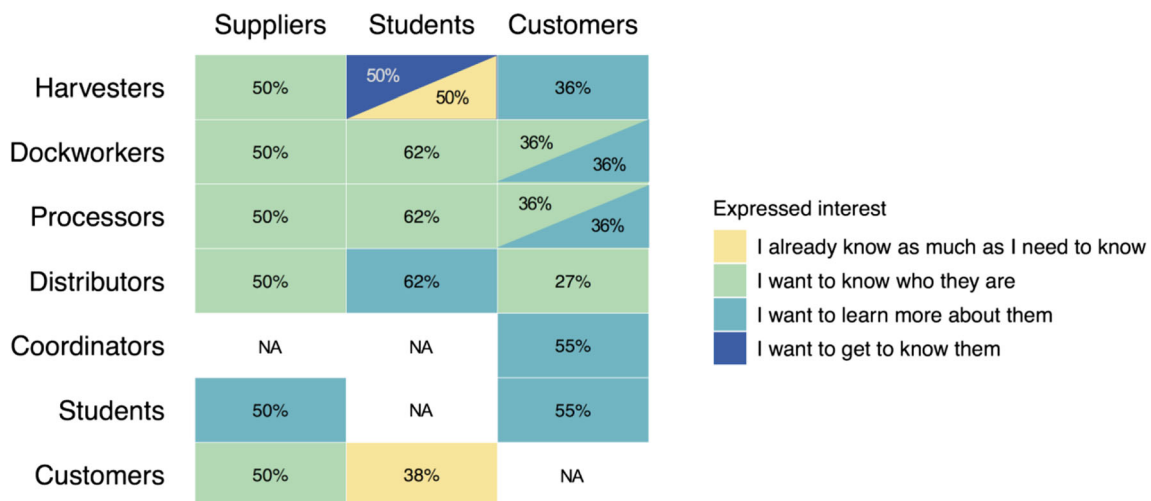
differed from those that they reported simply wanting to be able to identify (Fig. 5). Suppliers were most interested in learning more about the students (50%). Students were most interested in learning more about distributors (63%). Meanwhile, customers were most interested in learning more about the students (55%) and the project coordinators (55%).

**Desire to get to know other stakeholders** Stakeholders were less interested in actually getting to know each other than they were in identifying or learning about each other. The strongest desire to get to know another stakeholder group was 50% of students' desire to know harvesters. A quarter or fewer of the students were interested in getting to know other types of stakeholders. Customers, too, were most interested in getting to know harvesters, but even then only 27% expressed this desire. Only 25% of suppliers were interested in getting to know other suppliers, while none of them wanted to get to know other stakeholder groups.

**Desire for connection with other stakeholders**

In addition to Fishadelphia stakeholders' mutual knowledge and interest in each other, we also wanted to gauge their sense of personal connection with each other. Overall, we found that personal connections with others in the supply chain were less prevalent among stakeholders than other types of value they derive from participation. However, there were exceptions to this: in multiple instances, participants expressed stronger senses of connection to other stakeholders with whom they had come into direct contact through Fishadelphia project implementation.

**Suppliers** Overall, a low percentage of surveyed suppliers (20%) felt personally connected to other suppliers and students, and none of them felt personally connected to customers. However, 60% indicated feeling personally connected to the project coordinators: the people who have involved them in the project and who directly interface with the suppliers to place seafood orders.



**Fig. 5** Expressed interest in other stakeholders in the supply chain. Color indicates mode (most common) response of stakeholder (in columns) expressed interest in other stakeholders in the supply chain (in rows). NAs indicate intersections that were not examined with these instruments

**Students** For students, the most intense sense of connection was to one another: they bonded as a team while working to make the project a success. However, a field trip to one of the supplier docks in 2018 also inspired a stronger sense of personal connection to suppliers, as expressed in this interview excerpt:

Today I learned that in order to do something you just have to be very happy about it, and it must be something you love... They're just happy to serve us as a customer, and that's what's the best about it. So I feel very positive toward them. I should be; I mean, in general, someone that loves seafood should be really thankful to them, if you think about it.

In this statement, the student expresses a growing sense of appreciation toward the suppliers—not only because they provide a valued product but also based on an impression of the suppliers' own perspective on their work. This sense of connection goes beyond a transaction to become a sentiment that one person feels toward another on a personal level.

Another student described how the personal interactions across the supply chain differentiate an alternative supply chain venture like Fishadelphia from conventional supply chains:

While delivering the fish you also have to communicate and talk to one another and building that relationship... We're so close with the docks and stuff like that... I feel like our relationship is much closer than the regular supply.

**Customers** For customers, getting to know fish suppliers and other customers were among the least important aspects of Fishadelphia, valued by only 31% of active customers. This may reflect that the project to date has provided very little opportunity for these stakeholders to get to know each other. By contrast, a higher percentage (47%) of customers valued interacting with a group of stakeholders they encountered directly at pickup: the students.

Overall, these data and personal statements reinforce the findings that personal connection among supply chain stakeholders, to the extent it is established, may be cemented by direct interaction more than exposure to their existence.

## Discussion

In this study, we found that an intermediated alternative food supply chain, like its more thoroughly studied direct market

counterparts, is characterized by an interwoven and evolving array of economic and social motivations and relations. When examining the motivations and values guiding the participants in Fishadelphia, we did not find them to represent a linear spectrum extending from social/non-economic (embeddedness) to market/instrumental (economic/self-interested); rather, they resolve into three distinct meta-categories, each of which brings an important lens.

- *Self-interested* values are those that accrue to individuals through participating in a venture. This meta-category encompasses both the *instrumental* and *pride* categories used in our analysis. Importantly, these are not necessarily economic; they encompass a variety of individualistic benefits, ranging from income to skills to recognition. For example, Fishadelphia's students expressed highly self-interested reasons for joining the project, but they were not motivated by immediate economic gain; rather, they sought to gain expertise that could contribute to future personal/professional success. These findings support and expand on previous studies by Bolton et al. (2016), Campbell et al. (2014), Samoggia et al. (2019), Witter and Stoll (2017), and Zepeda et al. (2013), which documented that stakeholders gain a host of both market and non-market values from participating in alternative seafood and agricultural value chains.
- *Altruistic* values (encompassing both *social* and *environmental altruism*) are related to the perceived public impacts of the venture. Participants expressed a desire to advance an array of public goals by participating in Fishadelphia, e.g., boosting local economies, supporting fishing communities, or helping youth. Altruistic values reflected conceptual alignment with the perceived mission of the venture. Espousal of social/environmental ideals by participants in alternative food value chains aligns with findings of previous CSF/CSA studies including Bolton et al. (2016), Campbell et al. (2014), Ostrom, 2007, and Snyder and St. Martin (2015).
- *Relational* values are derived from connection to other participants in the venture; it is this category that most closely approximates embeddedness as characterized by Hinrichs (2000) and Granovetter (1985), as well as the "associative economy" cited by Worden (2004). These relational experiences represent opportunities for formation of social capital (Putnam 1995; Stoll et al. 2015). Relational values differ from altruistic values because it is the human relationship that motivates them, rather than the public benefit. This category encompasses an array of relationship types, ranging from the desire simply to know (more) about another stakeholder to the desire for (and potentially achievement of) a direct personal familiarity.

Our results suggest that no single one of these types of values is most important to the emergence and success of an alternative food value chain like Fishadelphia; instead, they suggest that any attempt to elucidate a master category may be misguided. As expressed by Fishadelphia participants, these values are inextricably interwoven. All three categories of values were expressed by all three stakeholder groups we assessed—suppliers, students, and customers. Indeed, in many cases, multiple categories of values were expressed simultaneously by a single individual.

Nor is it straightforward to identify which values are most important to a particular stakeholder group; different measures can lead to different conclusions. For example, when asked to self-identify values that motivated their participation, customers most commonly listed altruistic values; however, many customers also indicated that they had joined Fishadelphia because of personal ties to other project participants (i.e., relational value), and in explaining their reasons for continuing or discontinuing their participation after the first season, instrumental factors were most commonly cited (e.g., the quality of the fish or whether pickup logistics worked with their schedules).

Considered together, these findings most strongly suggest that an alignment of multiple value types may be important in motivating stakeholders to initiate and sustain participation in alternative, intermediated food value chains like Fishadelphia. Self-interest, altruism, and a desire for a relationship to others are to differing degrees important to each of the stakeholder groups. A single one of these value types may be sufficient to motivate a given individual's participation in the project, but the participation of a stakeholder group appears to be cemented by multiple value types in tandem that vary among individuals within the group.

### **Relationships among stakeholders in intermediated value chains**

Our examination of Fishadelphia's intermediated alternative value chain finds that relationships among stakeholders (relational values) have indeed been important to the venture's emergence and continuation, but that they are not simply a matter of direct contact between the ends of the supply chain—harvester and customer (in fact, while customers and seafood suppliers expressed interest in each other, direct contact between them ranged from limited to nonexistent due to the geographic configuration of Fishadelphia's supply chain and stakeholders).

Instead, social relationships in Fishadelphia consist of varied, multi-lateral connections among and within different stakeholder groups. These connections are concentrated not in one geographic location but in multiple sites extending

from coastal New Jersey to central Philadelphia (a distance of around 75 mi). Despite being spatially dispersed, these interpersonal relationships appear critical to the functioning of the project. Certain pre-existing relationships—particularly those linking customers to project coordinators and students—helped to recruit participants into the project. Other relationships have been built over the course of the project—notably (1) the personal connection between suppliers and project coordinators and (2) the social bonds established among members of the student group—may be crucial to continued operations. To varying degrees, each stakeholder group also evinced interest in learning more about the project's other stakeholders.

The relationships that have helped to establish and sustain Fishadelphia illustrate the potential of this kind of intermediated alternative value chain to create both bonding (within group) and bridging (between groups) social capital (Putnam 1995; Woolcock and Narayan 2000). The emergence of a shared identity (team spirit) among Fishadelphia's students is an example of bonding social capital formation, while the linkages that span socially distant stakeholders across the supply chain—typically connecting one or more supplier categories to one or more of the Philadelphia-based stakeholders—are indicative of bridging capital formation. Bridging capital was created in multiple ways, including stakeholders learning about each other and (less frequently) establishing direct personal bonds. Furthermore, stakeholder feedback suggests an appetite for further bridging capital development. At this juncture, it appears that a balance of both bridging and bonding capital will be important to the further growth and durability of Fishadelphia and comparable alternative supply chains. These findings are not surprising given research demonstrating the importance of social capital to the success of other socio-ecological and natural resource management projects, including fisheries (Pretty and Smith 2004; Bodin and Crona 2008).

### **Stakeholder perspectives vary**

Since it is part of Fishadelphia's mission to connect spatially disparate stakeholders, the project's coordinators have undertaken targeted educational interventions with the explicit goal of strengthening awareness, learning, and connection across the supply chain: the program distributes information about suppliers with customers' seafood shares and conducts field trips that bring Philadelphia stakeholders to the New Jersey shore. The learning that these interventions have fostered is evident in the results: consider student field trip participants' greater ability to model the supply chain (albeit demonstrated with very small sample sizes), as well as the self-reported knowledge gains by both students and customers. However, the durability of these effects has not been established, and



they are limited by participation (e.g., learning benefits of field trips are limited to those who took part).

In short, while the relational value of Fishadelphia is felt by stakeholders throughout the supply chain, an unsurprising consequence of intermediation is that views of the supply chain and its stakeholders do vary across, and within, groups. In other words, participants in Fishadelphia broadly value each other, but their explicit awareness of and interest in each other varies from group to group. This trend is evident in the differing abilities of each study group to identify other project stakeholders (Fig. 2) and stakeholders' differing degrees of interest in further connection with each other (Fig. 5).

### Broader implications

These results suggest both support of existing literature on alternative food ventures as well as novel implications for alternative food ventures, especially those operating in diverse urban contexts. Broad alignment between our findings and the existing CSF literature suggests that many of our results could map onto a broad array of CSF stakeholder communities. For example, the array of motivations that Fishadelphia stakeholders exhibited—self-interested, altruistic, and relational—corresponds broadly to motivations of CSF participants elsewhere (e.g., in Campbell et al. 2014, Witter and Stoll 2017). This alignment may partially reflect the fact that the customers who participated in our study are skewed toward participants who bear some similarities to the customers of other CSFs (e.g., more likely to be white, affluent, and well-educated).

Fishadelphia's student leaders, by contrast, differ from other CSF stakeholders represented in published research: they are mostly young people of color who predominantly come from less affluent and less highly educated backgrounds. The specific types of value that they derived from participating (e.g., opportunities for professional development and bonding with peers) suggest distinct ways of encountering a CSF/alternative food value chain initiative—ways that might map to other alternative food ventures in diverse urban, immigrant, minority, and/or working-class communities. However, a lack of corresponding research from comparable settings means that further research is required to determine the generalizability of these observations.

The literature on alternative agricultural marketing models (CSAs, farmers' markets), in contrast to that on fisheries, includes some work that examine these models' applicability to low-income communities (e.g., Guthman et al. 2006; Markowitz 2010; Galt et al. 2017), but these studies primarily examine the successes or failures of these programs to serve low-income customers. The experience of Fishadelphia's student leaders speaks to something different: the potential benefits that members of a low-income community may experience from designing and operating an alternative food venture

themselves. In our study, the low-income stakeholders are not recipients of services; they are the architects of those services. This embedding of alternative food ventures in low-income communities and communities of color warrants more examination across cases.

### Limitations of this analysis

Findings in this paper are based on a single, small-scale CSF project—Fishadelphia—that has only been in operation for 2 years, with a small total number of participants and stakeholders. Although our response rates were high (100% for suppliers and more than 75% for both students and customers), our respondent sample likely reflected some bias; for example, it may have been skewed toward more engaged participants. Participation also fluctuated as the project evolved, so sample sizes at different times varied. Furthermore, we were unable to include data from non-English-speaking customers in our analysis. (We have since addressed this limitation by developing Chinese-language instruments.)

Informal conversations with stakeholders who are not represented in our analysis, particularly non-English-speaking customers, suggest that their views align with key findings of this paper: for example, multiple values and interpersonal relationships appear to motivate their participation in the project. However, without further explicit study of these stakeholders, we are unable to gauge the relative importance that they give to different values and types of connection. This study, then, best represents the perspectives of the Fishadelphia stakeholders who have already been most fully engaged in the project; it is not representative of those stakeholders who have faced barriers to full participation or who have chosen to limit their participation. Further research will be valuable to improve the internal and external validity of the findings, as well as to improve the success of Fishadelphia and other CSFs in involving a broader array of stakeholders.

### Directions for further research

Tracking stakeholder views as the project progresses further will improve understanding of how the values they derive from participation, as well as their views of other stakeholders, evolve. Will the relational aspect of the project become increasingly important as participants have more time and opportunity to get to know one another? Or will connections to other stakeholders remain secondary to self-interest and altruism as a driver for sustained participation?

In particular, we are interested in tracking differences between stakeholders who have had different levels of exposure to each other. Does direct contact between stakeholder groups, for example, increase their mutual awareness and interest? Some initial results suggest so, but not conclusively. And if interventions like field trips do affect participants' views, what

is the longevity of those effects? How frequently must exposures be repeated in order to affect views?

We are also eager to learn how the social dimensions of intermediated alternative food value chains play out in other projects. We would be glad to see the measures we have used in this case study applied to other comparable food ventures. We further hope that both practitioners and researchers can continue to improve their understandings of the values that multiple stakeholder groups derive from participation in intermediated alternative food ventures; designing value chains to maximize these values will improve chances of long-term success of food systems in “Local Food 2.0.”

## Conclusions

Stakeholders from suppliers to consumers see CSFs, CSAs, and related alternative food value chains as having the potential to meet an array of needs that they see as being unmet by the prevailing agri-food system. These encompass personal needs (e.g., increased income or affordability, psychological validation), as well as shared benefits (e.g., sustainable stewardship of natural resources, supporting local economies). What is less clear is the importance of relational values to the success of alternative food value chains. In other words, how much does it matter whether stakeholders in the ventures feel connected to one another? This question is particularly crucial for intermediated value chains (i.e., Local Food 2.0). As Campbell et al. (2014) note, “the community-building possible through CSF will likely be different than what is possible through CSA,” (p. 93), since it is often logistically infeasible for seafood harvesters to interact directly with CSF customers in the same way as CSA farmers.

In the case of Fishadelphia, our research indicates that different stakeholders—who, in many cases, have had relatively little contact with one another—view and value the project, and their fellow participants, in different ways. Is this a problem? Mainstream food supply chains do not ensure that their stakeholders on the supply and demand side share a common understanding of the venture and each other; indeed, in an effort to present themselves as appealing to customers, mainstream food companies are likely to intentionally obscure aspects of the supply chain. To succeed in differentiating itself from this mainstream, does an alternative, intermediated food supply chain like Fishadelphia need to achieve full visibility, alignment, and perhaps rapport across stakeholder groups?

The answer to this question may depend on the definition of success. If success means establishing a financially viable, ongoing venture, full alignment across stakeholders may not be essential. Despite their varying levels of awareness of, interest in, and connection to other stakeholders, high proportions of both Fishadelphia students and customers expressed a desire to continue participating in the project. If customers remain committed to

Fishadelphia despite demonstrating a weak awareness of other stakeholders and placing low emphasis on the relational aspect of the project, then an increase in the relational value that they derive from participating may not be needed. Customers’ commitment to the project’s altruistic goals—establishing an equitable, environmentally sustainable fish supply chain that enables diverse urban communities to purchase locally-harvested seafood—does not appear to be dependent on the strength of their relational values. These results are supported by previous research showing that stakeholders may support an alternative value chain even if they do not view personal connections with other stakeholders in that value chain as important (Ostrom 2007).

If, on the other hand, the success of Fishadelphia—and comparable alternative, intermediated food value chains—is measured based on their ability to establish new kinds of relationships that transcend social divisions (i.e., more robust bridging capital), then more work is needed. Fishadelphia’s educational interventions have had an effect on stakeholders’ knowledge of each other, but that knowledge remains uneven, and feelings of direct personal connection are limited. In the end, that sense of connection still appears to be derived from face-to-face contact. The frequency and repetition of contact necessary to strengthen relational ties is not yet clear.

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