

# *The Zoom Where It Happens: Using a Virtual, Mixed-Methods Focus Group Approach to Assess Community Well-Being in Natural Resource Contexts*

**Samantha Cook, Laurie Richmond, Jocelyn Enevoldsen, Kelly Sayce, Rachelle Fisher, Cheryl Chen, Jon Bonkoski, Denise Chin, Joice Chang, and Mikayla Kia**

In response to the growing interest in the health of natural resource-dependent communities, numerous methods have been used to monitor community well-being. However, many existing approaches lack the ability to compare well-being metrics across space and over time while maintaining community voices and perspectives in their own well-being assessment. This manuscript describes the development and implementation of a virtual methodological approach to gathering both quantitative and qualitative data about community well-being in natural resource contexts. We demonstrate application of the approach with commercial fishing communities in relation to long-term socioeconomic monitoring of the California marine protected area network. The approach involved conducting focus groups with commercial fishing “community-experts” in eighteen major California ports. Due to pandemic conditions at the time of data collection, focus groups were held online over Zoom, but the method could also be conducted in-person when health and safety protocols allow. The focus groups were guided by a well-being assessment tool, which included quantitative questions where fishing community-experts were asked to rate their port along environmental, economic, and social aspects of community well-being. An open-ended qualitative discussion followed the rating exercise for each question, after which participants were asked to re-rate the question to produce deliberative, consensus-based ratings. We describe considerations of and insights from the implementation of this approach. Future researchers and practitioners may want to consider the benefits of this approach based on two factors: (1) the mixed-methods focus groups provided a means to develop quantitative well-being metrics comparable across communities and time and introduced rich qualitative information about the context of and conditions in communities across a large spatial area; and (2) the virtual format of the focus group led to lower research costs, offered greater flexibility in scheduling, and received positive feedback from participants who communicated the benefits of being able to participate in the research experience from the comfort and convenience of their own homes. Even as COVID-19 restrictions are lifted, researchers and practitioners may want to consider keeping virtual engagement approaches as a tool in their methodological toolbox, which can open up new avenues for connection and understanding.

**Key words:** well-being assessment, natural resource-dependent community, mixed-methods virtual focus group, clicker technology, deliberative valuation

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## **Introduction**

The concept of human well-being in relation to environmental and ecosystems concerns has gained increased prominence in academic, development, and policy circles, notably with its foregrounding in the Millennium Ecosystem Assessment (MEA 2005) and inclusion as a United Nations Sustainable Development Goal (UN 2015). Researchers are increasingly using the concept of well-being to examine the health of human communities within natural resource contexts (Breslow et al. 2016; King, Renó, and Novo 2014). According to Rasheed (2020:1), “human well-being refers to a holistic notion of the state and conditions of individuals and

communities.” This approach encompasses social, cultural, economic, and ecological conditions and includes such factors as people’s perceptions of the environment, economic opportunities, and social relationships, as well as happiness or quality of life.

Understanding the well-being of communities that are intrinsically linked to natural resource systems—and how this well-being changes over time—is crucial for the development of effective and just resource management strategies that promote both the health of natural resources and the human communities that rely on them (Jentoft 2000; Ngoc 2018). Gollan and Barclay (2020:3) argue that an interdisciplinary “well-being approach also gives an understanding and consideration of the different trade-offs between social, economic, and environmental outcomes in decision making that occur when implementing conservation interventions.” Academics have used a community well-being framework to examine community responses to perturbations in natural resources systems, including regulatory changes such as protected area implementation (Ban et al. 2019; Rasheed 2020), broadscale disturbances like wildfires and flooding (Hudson et al. 2019; Paveglio et al. 2016), and shifts in natural resource-dependent industry structures including reductions in timber harvest and mill closures (Charnley, McLain, and Donoghue 2008; Morzillo et al. 2015).

In order to consider information about community well-being in management and conservation processes, researchers and practitioners must develop cost-effective, scalable, and rigorous approaches to assess human well-being in natural resource contexts. This paper describes efforts by a group of researchers and consultants—in collaboration with community members and management agency staff—to develop a methodological framework to assess commercial fishing community well-being in relation to the implementation and long-term management of the statewide California marine protected area (MPA) network, completed in 2012 and totaling 124 MPAs (Murray and Hee 2019). The goal of this study was to design a statewide socioeconomic monitoring program that: (1) could be accomplished with a realistic budget; (2) could encompass the grand scale of the California coast, consisting of nineteen major commercial fishing ports; (3) would allow for direct comparisons between ports and overtime to contribute to future monitoring efforts; (4) would not unduly burden fishing community members who are overtaxed with requests for involvement in management and research activities; (5) would adequately capture the unique values, views, and voices of California’s fishing communities; and (6) would keep community and project team members safe during the height of the coronavirus (COVID-19) pandemic between 2020 and 2021 when travel and group interactions were prohibited.

We detail the approach we developed to address these needs, which involved conducting virtual, mixed-methods focus groups with “community-experts” (e.g., fishermen,<sup>1</sup> local fishing industry leaders) in each of California’s major commercial fishing ports. Due to limited budget and scope,

the well-being assessment focused on a subset of fishing community representatives: commercial fishermen and, in a separate effort not discussed in this paper, charter or commercial passenger fishing vessel (CPFV) owner/operators. In addition to describing the development and implementation of the methodology, this manuscript highlights insights gained from both the mixed-methods and virtual attributes of the approach. We present select findings from the research to demonstrate the type of data that can be collected using the method and to show how that data might be used. More comprehensive results and analysis can be found in Bonkoski et al. 2021.

## Existing Community Well-being Assessment Strategies

Scholars have tended to employ one of three general approaches to assess community well-being. While each approach offered many strengths, we found that none—on their own—could help us address the unique goals and challenges our study posed.

### Ethnographic Explorations

Several studies have taken an ethnographic approach to examine community well-being, often through a combination of interviews and/or focus groups, site visits, and participant observation. In some instances, this ethnographic work has been paired with surveys or secondary data analysis for a mixed-methods approach. Examples include regional United States fishing community profiles developed by the National Marine Fisheries Service (Grace-McCaskey 2015; Norman et al. 2007); in-depth examinations of forest-dependent communities (Grinspoon, Jaworski, and Phillips 2016; Spies et al. 2018); and an array of studies that center qualitative approaches such as interviews, focus groups, participant observation, and workshops (Chen, López-Carr, and Walker 2014; Hackett, Richmond, and Chen 2017; Parkins, Stedman, and Varghese 2001). The authors of these studies express the importance of getting “to know a place over time” (Chen, López-Carr, and Walker 2014:760), inviting community members to identify factors important to their own well-being (Parkins, Stedman, and Varghese 2001), and highlighting the rich and nuanced voices and experiences of community members—knowledge that could not be captured in short-term visits to communities, surveys, or rapid views of data (McKenna and Main 2013). While qualitative, ethnographic research yields important cultural information about a community, it can be both time-consuming and difficult to scale up; many methods sources recommend extended periods in the field ranging anywhere from three months to multiple years to conduct robust ethnographies (Byrne 2001; Widiyanto and Sugiman 2015). In addition, ethnographic explorations can be restricted in their ability to compare communities with each other or to track changes over time, which typically require standardized metrics often found in quantitative approaches.

## Survey Approaches

Similar to ethnographic research, the use of survey data in well-being assessments offers the ability to capture participants' perceptions about the state of their communities (Brehm, Eisenhauer, and Krannich 2004; Pollnac, Seara, and Colburn 2015). In addition, the collection of quantitative information through surveys allows for the exploration of changes in a single community (Smith, Krannich, and Hunter 2001) as well as differences and similarities between communities (Petrzelka, Krannich, and Brehm 2006). At the same time, survey distribution can be expensive and require significant time on the part of the research team. Additionally, receiving a high response rate can be difficult, especially among groups that can be hard to get a hold of (Pollnac, Seara, and Colburn 2015) or are, at times, unwilling to participate for a variety of reasons (Hackett, Richmond, and Chen 2017), including participant burnout. Together, these limitations could create a response bias that affects the sample represented in survey data. When compared to qualitative methods, surveys can also miss the rich, contextual information that can help to characterize community health and well-being. There are numerous examples in the literature of researchers combining survey approaches with qualitative methods such as semi-structured interviews or focus groups to develop rich, mixed-methods datasets related to community well-being (Carothers 2015; Hackett, Richmond, and Chen 2017; NOAA Fisheries 2022; Parkins, Stedman, and Varghese 2001). However, these approaches require the mobilization of two different methods separately, which may be cost- and time-prohibitive for both the researchers and the study participants, some of whom may have to participate in the study twice. Alternatively, Tashakkori and Teddlie (1998:96) offer insights into using "both [quantitative and qualitative] data collection approaches in one study."

## Secondary Data

Many well-being assessments rely on drawing from secondary data like the census (Charnley, McLain, and Donoghue 2008; Jepson and Colburn 2013), fishery landings and permits (Felthoven and Kasperski 2013; Himes-Cornell and Kasperski 2016), and existing indicators (Ban et al. 2019; Breslow et al. 2016; Van Holt et al. 2016) to characterize a community and how it is changing. While secondary data can be cost-effective and easy to track over time and across communities, the data can lack linkage to the reality unfolding within a community because they are not collected directly from individuals who hold specialized knowledge of their own community's well-being. As an example, census data reflect the average conditions across a large geographic tract, but subset groups within those areas, such as fishing- or forest-dependent communities, may not be experiencing the same average conditions. Additionally, secondary data are seldom collected year after year, making them susceptible to becoming out-of-date (Blount et al. 2015). While secondary data may also provide

a window into changes that are happening within communities, they do little to explore how community members are responding to and understanding those changes. Blount et al. (2015) sought to overcome these challenges by combining secondary data analysis with qualitative approaches, including expert description of communities and cognitive-based interviews. However, this mixed-methods approach may not be realistic for researchers and practitioners to employ under budget and time constraints.

## The Approach

To address the unique context, scale, and budget constraints of this study, our team developed and implemented what we deemed a "community-expert" approach to socioeconomic monitoring that sought to center California fishermen in the assessment of the health and well-being of their fishing communities in relation to MPA formation and management. The approach employed a series of focus groups hosted in each community of interest with individuals whose demographics and experiences were reflective of the overall conditions of the community to the extent possible. The focus groups were held in a virtual format and followed a structured, deliberative process that yielded both quantitative and qualitative data.

## Community-experts and Focus Group Recruitment

"Community-experts" or key informants have been used in the well-being and socioeconomic assessment of natural resource-dependent communities, often in the context of management strategies (Blount et al. 2015; Halpern et al. 2014; Smith et al. 2019; Van Holt et al. 2016). This work suggests the views of a carefully selected group of representative individuals from a given community can inform a rigorous assessment protocol. Community-expert approaches are particularly favorable for rapid assessments and projects with limited budgets, areas with limited data, and when accounting for large geographic areas.

A key step in employing a community-expert approach is to define the boundaries of the communities of interest. This definition may vary depending on the natural resource context and goals of the study. In the fishery context, there has been considerable debate and discussion about the definition of a "fishing community" (Clay and Olson 2007, 2008; Jacob et al. 2001; Martin and Olson 2017). While many scholars and practitioners have defined fishing communities in relation to the home ports where fishermen keep their vessels when they are not fishing, some have defined fishing communities based on the type of gear particular fishermen use or the ocean spaces where fishermen fish—so-called "communities at sea" (Martin and Olson 2017)—and others on similar cultural references or modes of viewing the world (Ross 2015). In this study, we defined fishing communities using fishermen's land-based home ports consistent with federal ("a social or economic group whose members reside in a specific location"

[Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1801 {1976}] and state definitions (“a social, cultural, economic, and/or place-based group” [California Fish and Game Commission 2022]) of fishing communities. Additionally, fishermen connected to particular home ports share common experiences with infrastructure, markets, port-based fishing and marketing associations, and local government and community interactions—key attributes of our well-being assessment tool.

A definition of the “community-experts” of focus is another important step of this approach and determines who is recruited to participate in the study. Many expert-based assessment tools rely on more traditional definitions of experts, such as scientists and agency staff (Anderson et al. 2015; Halpern et al. 2014; Smith et al. 2019). However, this project-centered commercial fishing community members themselves as the greatest experts on the perceptions and experiences of fellow industry participants from their ports. Many definitions of a fishing community, including those in federal and state law, encompass a broader scope of the fishing community that includes support businesses and organizations (i.e., processors, suppliers, and infrastructure industries). Due to the goals of the funding source and limited budget and time resources, the project team focused on two subgroups within the fishing community—commercial fishermen (discussed here) and CPFV owner/operators (not the focus of this paper but can be found in Bonkoski et al. 2021). We defined community-experts as individuals who had a strong awareness of the state of their commercial fishing community/industry broadly. Community-expert participants included commercial fishing captains, vessel owners, crew members, and occasionally individuals who did not currently fish themselves but were extremely connected to and knowledgeable about the fishing community through business activities, familial ties, and political engagement. For an accurate and complete assessment of well-being, it was essential to gather focus group participants who represented the demographic range of the fishing community and could speak beyond their individual perspectives to share information about the well-being of their community overall (for more detail on the recruitment process, see supplemental material pg. 259). Demographic categories considered in the representation of focus group participants included occupation (e.g., commercial fisherman), age, gender, years of experience fishing in California (before/after MPA implementation), type and number of fisheries of participation, and scale of operation (e.g., ex-vessel revenue, boat size).

### Assessment Tool

We designed an assessment tool to guide the focus group discussions on topics related to fishing community well-being and perceptions of MPA impacts and outcomes (supplemental material pg. 261); this paper focuses primarily on the well-being components. The assessment tool (hereafter: the tool) contained a total of sixteen questions that had

a quantitative and qualitative element, ten of which spoke to facets of well-being. We used the community capitals framework (CCF) as a foundation to develop a holistic set of questions that addressed all aspects of fishing community well-being. The CCF separates well-being into seven interdependent capitals: environmental, financial, built, human, cultural, social, and political (Emery and Flora 2006). We further refined the well-being questions through an iterative process that included consulting the literature and cataloging various examples of well-being indicators related to California fisheries (Bennett et al. 2019; Breslow et al. 2017; Brueckner-Irwin, Armitage, and Courtenay 2019; Charles and Wilson 2009) and used this information to fill in areas not covered through the CCF. Additionally, we gained feedback and perspectives on a draft list of the well-being questions from community members, management officials, and academics, which we used to create a final set of questions.

A five-point Likert scale and a list of topics for consideration/criteria accompanied each question. The Likert scale response options ranged from very low (1) to very high (5), with a rating of 3 being neutral. The specific criteria under each question helped inform the quantitative ratings and guided participant commentary and description of environmental, economic, and social aspects of their community’s well-being.

### Focus Group Protocol

Data collection was set to take place during Summer 2020 in-person with fishing community-experts in ports across California, and we had planned to use electronic clickers to allow focus group participants to rate quantitative prompts as a part of the focus group process. With the emergence of the COVID-19 pandemic in early 2020, physical distancing restrictions made statewide travel and group interactions infeasible. In an effort to meet our timeline and project deliverable goals, we moved our approach online using the Zoom meeting platform. A literature review on online focus groups suggested the approach was fairly novel before the pandemic, necessitating that we innovate a virtual methodology suitable for our study design and population.

We held virtual focus groups with a total of eighty-five members of California’s commercial fishing communities across eighteen major ports between July 2020 and March 2021 (supplemental material pg. 265). Focus groups were between three and four hours in length, inclusive of a break about halfway through, and ranged from three to eight participants. Of note is the large staff commitment required to implement this approach. Prior to the focus groups, two to three field staff dedicated numerous hours to recruiting study participants from each port and preparing them for the online experience. We required at least three staff members—often more—to help run and facilitate the focus groups; two facilitators led the discussion and elicited participant responses, and additional staff were present to provide technical support, take notes, and manage the Zoom features.

Each focus group followed a similar structure. The first half-hour was dedicated to a Zoom training and orientation to help familiarize participants with the technology; ensure they felt comfortable using Zoom functions that would be used throughout the meeting, such as mute, video, chat, and the polling feature; and encourage full participation in the focus group discussion. We followed the technology training with project team and participant introductions, a review of the meeting agenda and approach, information about the project background, and instructions for the focus group process. After reviewing the consent form as per Institutional Review Board (IRB) guidelines, we collected participants' consent to take part in the study and preferences for confidentiality in project outputs via a Zoom poll.

The discussion portion of the focus groups followed a three-step process, which enabled researchers to gather quantitative ratings and qualitative discussion relevant to a set of well-being topics. We grouped the well-being questions in the tool into bundles of one to three questions connected to a broader topic or theme, which allowed participants to engage with and discuss multiple questions at the same time. For example, one bundle included two questions related to environmental well-being: current marine resource health and concerns about the future health of marine resources. Supplemental material pg. 258-268 contains all questions in the tool; those labeled with a common number and different letters were part of the same question bundle.

For each question bundle, the facilitator launched a pre-populated Zoom poll with the question text, topics for consideration, and Likert scale response options. The poll appeared on participants' respective screens, and the facilitator read the Zoom poll content out loud before instructing participants to enter their ratings through the Zoom polling function. The facilitator encouraged participants to think beyond their individual experiences and to reflect and respond based on the broad experiences and views of fishermen throughout their port. For some of the broader topics, such as external social relationships or job satisfaction, participants often reported experiencing both positive and negative attributes; in these instances, we asked participants to do their best to average these different aspects and produce an overall rating they felt reflected both the positives and negatives.

Once all participants rated the questions presented in the Zoom poll, the facilitator showed and walked through the group's collective results and asked participants to engage in a ten-to-fifteen-minute discussion about why they selected the responses that they did. The facilitator asked guiding questions throughout the discussion to help keep the conversation going and to reveal details and other context related to the question topics. This encouraged participants to engage in more nuanced discussions of the broad question topics and reveal how the different well-being components were experienced in each community. We captured both the ratings and this nuanced discussion in detailed focus group summaries and in the final report for this project (Bonkoski et al. 2021).

At the end of the discussion, the facilitator presented a new Zoom poll with the same bundle of questions participants

had just discussed. They asked participants to rate the questions again to see if the conversation changed any individual ratings or moved the group toward a more consensus-based or collaborative rating. Similar to the first round of ratings, the facilitator displayed the results and shared the spread of the second ratings. These second, deliberative ratings were taken as the final rating for that focus group and used in the analysis and interpretation of the quantitative data.

The deliberative approach we present here drew from methodologies being explored and refined in many fields, including city and regional planning, stakeholder engagement, conflict mediation, and environmental economics (Dembinska and Montambeault 2015; Gordon and Manosevitch 2010; Legacy 2010; Lliso et al. 2020; Murphy et al. 2017). For instance, in traditional economic valuation, studies have relied on surveys of the population of interest in which individuals rate their willingness to pay for certain environmental features or functions (Borsuk et al. 2019; Kenter et al. 2011). Researchers have found that deliberative valuation processes that draw from a small number of diverse representatives from a given community can overcome the need to conduct extensive surveys. Through deliberation, the group is able to work out their differences and come to a value that is broadly reflective of the community (Wilson and Howarth 2002).

This focus group approach also applies principles related to consensus-based decision making in which a group of disparate members engages in a deliberative process to determine an agreed-upon path or action (Cohn 2002; NOAA Office of National Marine Sanctuaries 2022; Sykora-Bodie and Morrison 2019). Participants rated each question a second time after having a discussion with their fellow community members. Existing theories suggest the second rating following the deliberation may better account for the conditions in the community, as participants were able to incorporate and reflect on other perspectives shared among the group. We were not able to find examples of previous studies using deliberative, mixed-methods focus groups as described here to examine community well-being, but we thought the theory and practice from other fields supported its use, particularly in long-term monitoring efforts. We felt that the strength of the deliberative, consensus-based components could make repetition of the approach viable even if different participants are recruited upon each application of the tool. Implementation at consistent time intervals (i.e., every five or ten years) could provide an understanding of how communities are responding to management interventions from the perspective of community-experts at the time of study. Additionally, the standardized ratings and accompanying contextual focus group discussions help to overcome many of the challenges inherent in the ethnographic, survey, and secondary data well-being assessment approaches described above.

## Data Analysis

We recorded all focus group discussions using the cloud recording function in Zoom. Transcripts were initially generated through Zoom and refined using Sonix.ai. We applied

standard qualitative analysis techniques to examine patterns and findings within the qualitative data (Saldaña 2016). We coded focus group transcripts in Dedoose and linked key themes to focus group question topics.

We gathered quantitative data from Zoom poll reports and compiled the data in Google Sheets. We analyzed the data in Google Sheets, Excel, and Statistical Package for the Social Sciences (SPSS) and visualized the results of the analysis in Excel, SPSS, PowerPoint, and R. We ran frequencies and used the ratings to develop an overall well-being index. To obtain the index, we summed and normalized three well-being sub-indices (environmental, economic, social); we assessed the internal coherence of questions in each sub-index using Cronbach’s alpha, which was at or greater than 0.7 in all cases (supplemental material pg. 265).

### In Practice

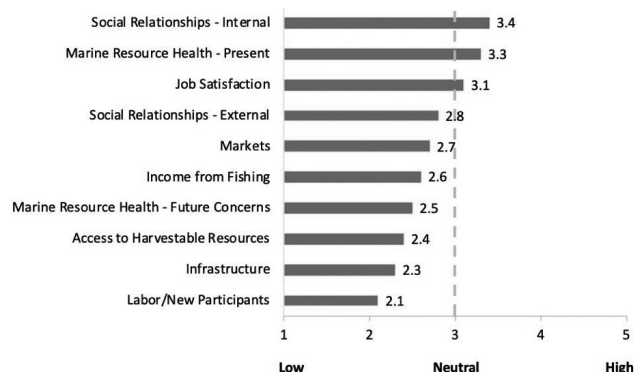
The following section presents select findings related to the well-being of California’s commercial fishing communities to demonstrate the capabilities of the approach. We first describe the type of data collected and adjustments made in light of COVID-19. We then discuss participant feedback on the virtual process, as well as lessons learned from the project team’s perspective.

#### Well-being

We found that the quantitative ratings and qualitative commentary during the focus groups were able to highlight perceived well-being challenges and strengths across California’s commercial fishing communities, indicating the usefulness of this approach as a well-being assessment tool for communities in natural resource contexts. Here, we offer a broad overview of study findings to illustrate the data we were able to collect and the value of the mixed-methods approach; a more comprehensive overview of all findings can be found in Bonkoski et al. 2021. For instance, Figure 1 shows the statewide average rating for each well-being question, ordered from highest to lowest. We considered well-being areas with an average rating below neutral as potential opportunities for improvement, while those with an average rating above neutral suggested more positive attributes.

Examination of the quantitative data revealed that seven of the ten well-being questions had an average rating below neutral, suggesting that California commercial fishing communities were experiencing many perceived well-being challenges. The qualitative discussions added nuance and context to the ratings, which helped us better understand the perceived conditions in the port that contributed to their selected ratings (supplemental material pg. 266). For instance, the ability to recruit and retain participants in the commercial fishing industry had the lowest average rating across the state. Participant commentary during the focus group discussions created space for participants across focus groups to elaborate on these challenges. For example, many participants brought

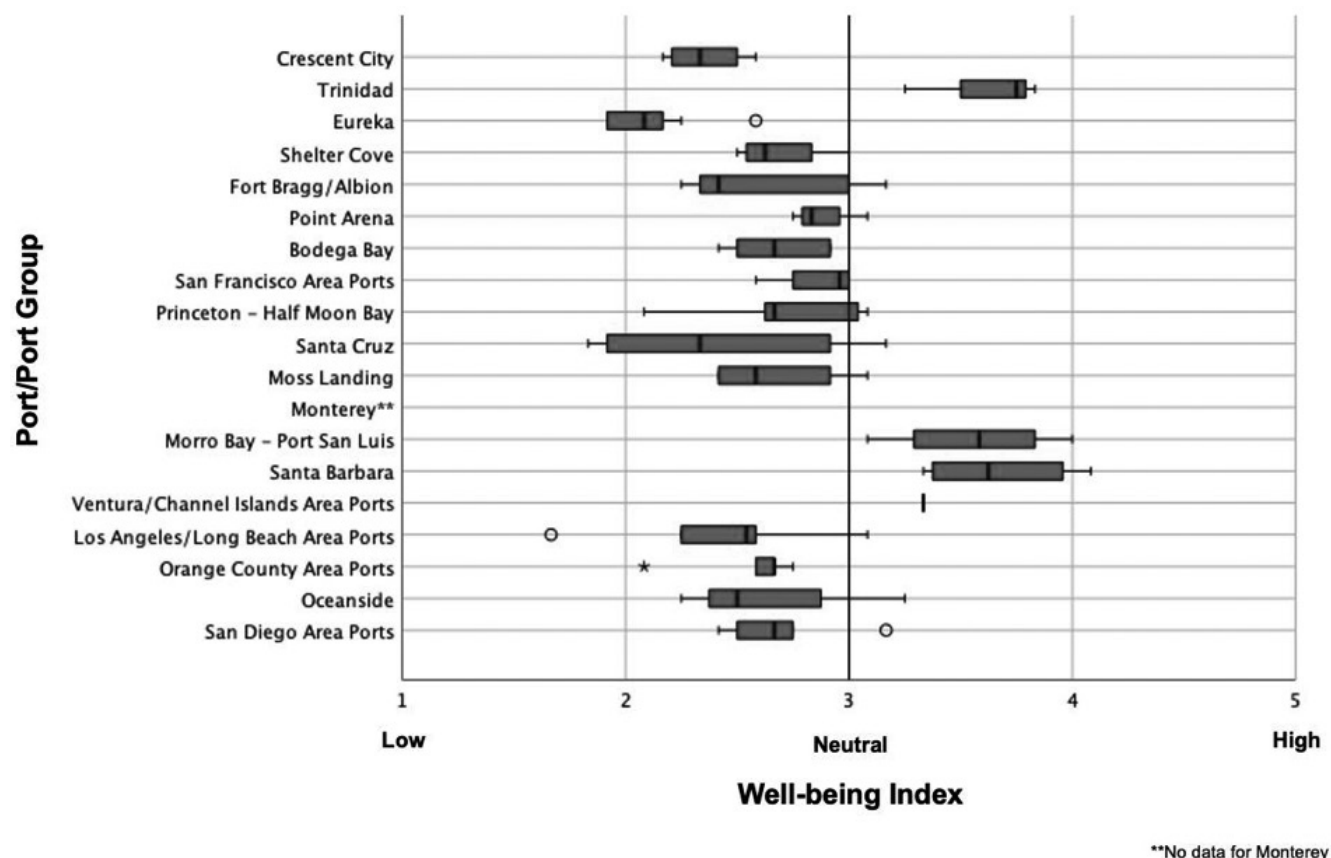
**Figure 1. Statewide Average Rating for Each Well-being Question, Ordered from Highest to Lowest**



up high start-up costs, including the “need [for] a couple hundred thousand dollars to buy a permit, a good boat, and good gear to maybe be competitive” (Orange County area commercial fisherman [CF]), as barriers for young people to enter and survive in the industry. Despite noting occasional instances of younger fishermen entering and remaining in the fishing industry, participants went on to express worries about the so-called graying or aging of the fleet and indicated other financial and regulatory burdens were “putting fishermen out of work and keeping new fishermen from coming into the industry” (Moss Landing CF). Many participants indicated that their ratings were lowered even further by the challenge of finding and maintaining a quality crew to support their fishing operations. This example reveals how the quantitative portion of the approach could provide a quick snapshot of well-being conditions across the state—particularly those that need improvement—while the discussion portion provided more detail that could help researchers, managers, and fishermen gain more specific information about the factors contributing to those ratings and possible interventions that could help to improve deficient areas.

This approach also provided the ability to make comparisons between different communities while also gathering contextual information about how and why communities differed across environmental, economic, and social areas of well-being. To allow for at-a-glance comparisons of commercial fishing communities across California, we created an overall well-being index based on community-expert responses to the quantitative components of the well-being focus group questions. The boxplot in Figure 2 visualizes the distribution of participant well-being index values organized by port-based fishing community. The data reveal that perceptions of well-being varied fairly extensively across the state, suggesting that not all ports were experiencing the same type or extent of perceived challenges and strengths illustrated in Figure 1.

**Figure 2. Distribution of Participant Perceived Well-being Index Values Organized by Focus Group, Ordered Geographically from North to South. Each box contains the values in the first quartile, median, and third quartile, with the bold line representing the median. The left whisker is the minimum value (excluding outliers), and the right whisker is the maximum value (excluding outliers). The circles represent outliers, and the asterisks represent extreme values.**



Participant contributions during the discussion portion of the focus groups highlighted both similarities and differences between ports with high and low perceived well-being. For instance, participants from both Santa Barbara and Eureka—ports with the highest and lowest average well-being index, respectively—described strong social relationships between fishermen and with external entities, including “some younger guys that are potentially getting a bit more engaged in the [fisheries decision-making] process” (Eureka CF). Additionally, both Santa Barbara and Eureka participants were worried about factors affecting the potential future health of local fisheries, such as habitat loss. However, while Santa Barbara participants described favorable economic conditions—sharing how local fishermen “have a pretty diverse product base” and are able to bring a “variety of species to market,” including through traditional processors and multiple avenues for direct marketing—Eureka participants perceived the port’s markets have declined in quantity and quality over the years. Details such as these contextualized the well-being indices and enabled qualitative and quantitative

comparisons between Santa Barbara, Eureka, and all other ports represented in this research along various concepts of environmental, economic, and social well-being.

### COVID-19 Impacts

Data collection for this project began in July 2020, around the time that new COVID-19 cases first peaked in many California counties during the initial months of the pandemic (Gutierrez 2020). Given this timing, participants in early focus groups often discussed how COVID-19 was affecting fishermen in their ports despite the tool not including a question on the topic. In response to the frequency that COVID-19 impacts were brought up during these focus groups, and a request from managers to collect this information, we added a question to the tool specific to COVID-19 impacts. From the fifth focus group onward, participants rated and discussed disruptions to their port’s fishing operations as a result of the pandemic.

Similar to the well-being questions in the tool, both quantitative and qualitative insights into how fishermen across California ports experienced and responded to the pandemic emerged from this approach, which we customized for the COVID-19 context of data collection. As an example, participants recounted negative impacts due to COVID-19, with 63 percent reporting high or very high levels of disruption, 29 percent reporting medium levels, and 8 percent reporting low or very low levels (supplemental material pg. 268). The focus group discussion component elicited participant responses as to how and why they experienced negative impacts. For instance, participants up and down the coast discussed challenges selling their catch through traditional markets, including overseas and export markets, restaurant sales, and trucking operations for buyers, with one Bodega Bay commercial fisherman saying, “It got to a point where the buyers didn’t even want your crabs, and they just told you to bring your gear in and find somebody else to sell them to.”

We designed the tool to allow for both consistency and flexibility, making it possible to easily add a new question in response to an emerging issue like COVID-19, producing the select results described above. With the tool, a core set of well-being questions could be asked in future implementations of the study to track changes in well-being characteristics over time. New questions could be added and/or removed based on the needs of the study, the interests of the researchers and practitioners, and the context of data collection.

## Experiences with the Method

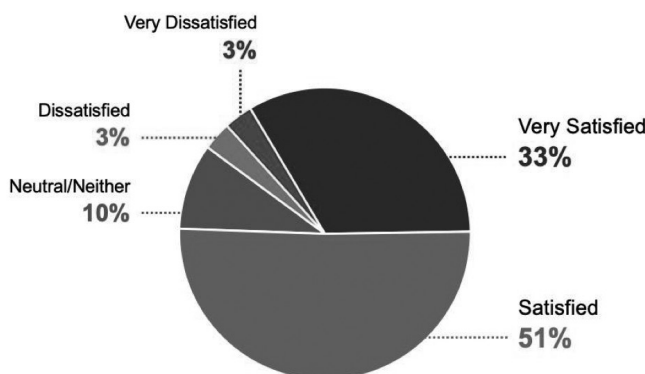
### Participant Feedback

When we began the transition to remote data collection, we were unsure how fishermen, a group that self-reports as less technologically savvy in a traditional sense compared to other demographics, would respond to the virtual approach to community engagement. At the end of the focus groups,

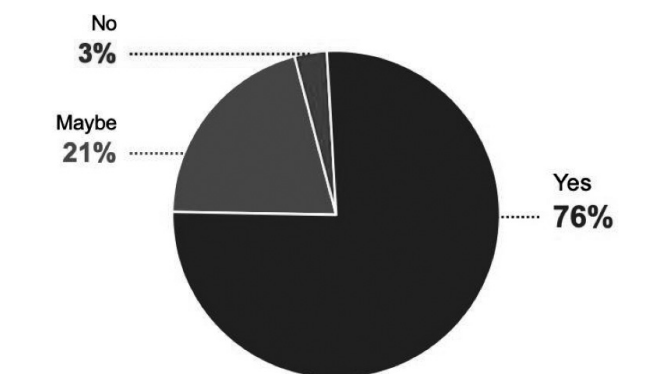
we asked participants two questions about their perceptions of the virtual process. A majority of participants stated they were either satisfied or very satisfied with their experience participating in the virtual focus group (Figure 3), and over three-quarters of participants said they would be open to participating in a virtual meeting in the future (Figure 4). One participant said they were “very satisfied” and added, “You can count on me to be here whenever I can.” Several participants reported that the Zoom training and orientation at the start of the focus group helped them feel comfortable navigating the technology throughout the meeting, even among those who had not used Zoom before or were not as familiar with the virtual meeting platform. One participant explained, “I really appreciated the Zoom tutorial because there are little things that I tend to forget, like the raise hand [function]. So it was really great that you...walked us through that.” Others stated the virtual environment made it easier for them to open up about their experiences because they were joining the meeting from a place familiar to them. Additionally, holding the focus group in a virtual setting made it possible for some participants to join who otherwise would not have been able if the meeting was in-person. One participant said, “I think this has been a very good way of being able to gather several people in different geographic areas in an area where we feel comfortable, like I’m at home.” Participants also expressed support for a neutral third-party facilitation team and believed the facilitators were professional, transparent, and attentive to their needs and concerns regarding their participation in this project. In the words of one participant, “I would probably participate again if I felt that it...had a level of neutrality, kind of like it does now. If the line of questioning was different, maybe not, but I thought [the project team] did a good job.”

Participants did note that technological and connectivity issues may have been a barrier to joining the focus groups for some members of their fishing community who were interested in participating. One participant was “disappointed that some of the [invitees] didn’t come, but I understand that this

**Figure 3. Participants’ Satisfaction with the Virtual Process ( $n=63$ )**



**Figure 4. Participants’ Willingness to Participate in a Virtual Process in the Future ( $n=63$ )**





is a time commitment. And I know we had some technical difficulties, and [name redacted's] tablet maybe is not really that compatible." However, through flexibility and creativity, we were able to adapt to most technology challenges, sometimes having a participant with internet connection issues call into the meeting or having a facilitator act as a proxy to enter quantitative ratings for someone who was unable to through Zoom. Participants expressed some concerns about the length of the focus group, in part due to the virtual nature of the meeting, which slowed the process down at times; completing the Zoom training and getting every individual logged in and ready to participate sometimes took up to thirty minutes. A participant said, "If there was any way to shorten [the focus groups], that would be my only suggestion." Many participants expressed a preference for in-person meetings, with one participant sharing, "The only horrible thing was this darn Zoom. I got a crummy computer. Maybe we could all meet in a big room one day."

## Lessons Learned

### Value of Conducting a Pilot Focus Group

We held a pilot focus group with fishermen out of Bodega Bay in July 2020 to help refine the approach. That first meeting provided the opportunity to receive feedback from participants and facilitators, which we used to develop a consistent process for the remaining focus groups. Notable changes to the approach included updates to the meeting materials and Zoom polls, which helped streamline the virtual process. Holding virtual, quantitative and qualitative focus groups was a new experience for both participants and project team members, and we found value in convening a pilot meeting with individuals who were open to learning alongside the facilitation team. As an example, fishermen with whom project team members had long-standing relationships and knew what to expect joined us in the pilot focus group for this project.

### Importance of Pre-existing Relationships for Successful Recruitment and Participation

We were fortunate that several members of our project team had extensive experience working with fishing communities in California. These pre-existing relationships and established trust were extremely beneficial in the recruitment process. We conducted the focus groups during a stressful time when fishermen were already being pulled in many directions due to COVID-19 and other fisheries-related circumstances. Participants may have been more willing to engage in and commit upwards of four hours of their time to a virtual focus group process because they already knew and trusted several members of the project team. Future researchers may want to consider this factor in their design. If they do not have pre-existing relationships, one approach might be to bring a community liaison onto the project to assist with relationship-building and recruitment.

## Benefits of the Zoom Training and Orientation

We found that holding a Zoom training at the beginning of each focus group helped participants with little to no experience with Zoom successfully engage in the discussion with some of the more complex features. This was especially important since we were working with a population that was not as comfortable with the technology; some commercial fishermen do not have an email address, and many do not have smartphones. In this way, the training allowed for more inclusive representation in the focus groups. Future researchers may want to consider the technological barriers that remote meeting software poses in participatory research and how to overcome them to ensure that a more complete cross section of the communities of study is able to participate. As an additional benefit, participants left the focus groups with new technological skills that could potentially support their engagement in management, policy, and other processes, many of which had switched to virtual formats using similar technologies and softwares during the pandemic.

## Strength of the Deliberative, Dual Rating Approach

In the approach we developed, participants rated each question twice, once before and another after the discussion. We observed participants' quantitative ratings occasionally change after discussing the focus group questions with other participants. When asked why they changed their ratings, participants generally gave two reasons. First, some participants stated that they had not fully understood the question during the first rating and that the discussion helped clarify the question so that they could provide a more accurate rating the second time. Second, some participants mentioned that their assessment of the question changed based on hearing other participants' perspectives, which brought new insights and thoughts into their second ratings that they had not considered the first time around. This suggests that participants were able to emerge from the discussion with a more complete interpretation of the question, which was reflected in their final ratings. Both of these responses highlight the benefits of the deliberative, dual rating approach to gathering more accurate information about a given community or situation. Future researchers may want to consider applying a similar pre-/post-rating exercise to deliberative approaches to produce more consensus-based results that reflect an accurate understanding of the questions and consideration of broad community conditions rather than participants' own individual perspectives. The pre-/post-ratings could also be analyzed to identify where and how responses differed before and after the conversation.

In addition, we found that the polling element was helpful for stimulating the discussion among participants due to the virtual nature of the focus groups, where conversation, at times, can seem awkward in an online setting. We piloted the focus groups without the quantitative rating exercise in another part of the study with CPFV owner/operators and found it was difficult for participants to talk among themselves

without having the poll results to reference. As a result, we added the rating component to those focus groups as well. It is worth noting that this mixed-methods, deliberative focus group approach could also be applied in-person through the use of electronic clickers or other voting/rating mechanisms.

### **Fairness of Compensation for Participants**

Regardless of whether the focus groups were held virtually or in-person, participation in this project still meant that fishermen were taking time off the water and away from their businesses, as well as from their families. In an effort to promote equitable engagement throughout the project, we offered compensation to all participants. Compensation may have been even more important with the virtual approach, where focus groups took longer and were more tiring. In conversations with fishermen both inside and outside of the focus group setting, we often heard mention how researchers and agency staff are paid to attend meetings or engage in research studies while fishermen must volunteer their time for free. Compensation of participants is one way to help offset this imbalance and can be calculated using the allotted budget for the study and the number of expected participants per focus group.

### **Limitations of the Virtual/Technological Approach**

The use of focus groups in this project was beneficial in that it allowed space for dialog and conversation among participants about community well-being. At the same time, the online focus group format made it difficult for participants to see cues for when to speak, which are important in in-person focus groups. There was more of a back-and-forth between participants and facilitators rather than among participants. Additionally, while the Zoom training and orientation helped reduce interruptions, there were still technology and connectivity issues (i.e., lagging audio, outdated devices and/or software that made participation difficult) from which equity considerations in access to technology also emerged. Despite these limitations, we still observed genuine and meaningful interactions between participants. There was an emotional moment in one focus group during a discussion about internal social relationships. Two fishermen whose friendship had deepened over thirty-five years since their first meeting as deckhands shared about a time when their differences led to them not speaking to one another. They went on to say that even during the worst of times, they would be there for each other and were soon tearing up remembering the joy of their bond as fishermen. It was as though the focus group—even on Zoom—created a space for connection and even healing among the participants.

### **Conclusions**

Overall, we found this virtual, community-expert, well-being assessment approach with quantitative and qualitative focus group elements to be an elegant solution to the

challenges we faced in study design. It provided a means to develop quantitative metrics that could be compared across space and time while also allowing for the collection of rich qualitative information about the context of and conditions in communities of interest. We found the approach was effective at generating a portrait of fishing community well-being at the large spatial scale of California, allowing for interactions with community members in each of the major ports while also telling a broader, statewide story. However, we advise users of the approach to take care in how they present their findings. Our focus groups consisted of three to eight participants; due to the logistics of the discussions, we would not recommend convening focus groups much larger than this size. The deliberative, community-expert approach helped to overcome, but not eliminate, the concerns of these smaller sample sizes; typical fishing ports may have between twenty and 100 active commercial vessels at a given time. The ratings and qualitative data contained in the focus group summaries and final report for this project provided a snapshot of overall community well-being across the state and in specific ports, but they should not be viewed as an endpoint in understanding community health. We encourage readers of the findings who are interested in learning more about the communities of study to follow up with direct engagement with fishing community members on specific topics—particularly those related to management—and to seek out more detailed, port-specific information, such as fishing community profiles, when attempting to understand the context of specific communities.

We originally designed and intended for the focus groups to be held in-person with the use of clickers to collect participant ratings. The circumstances of the COVID-19 pandemic led us to attempt a virtual approach that we otherwise never would have considered and that participants and project team members found satisfactory. While we all long for the return of the rich in-person and in-place interactions that are the foundation of applied anthropology, there are aspects of the virtual approach to recommend. We were able to save money on travel costs, which can be an important consideration, especially for projects taking place over a large spatial area. Also, many participants expressed interest in the comfort and convenience of being able to participate in group discussions from their own homes. Even as COVID-19 restrictions are lifted, researchers and practitioners may want to consider keeping virtual engagement approaches as one tool in their methodological toolbox. In addition, the pandemic normalized the use of virtual meeting software and remote interactions, so many more types of people will be familiar with the technology and willing and able to act naturally and share their perspectives in these types of environments. The pandemic has irrevocably shifted so many aspects of our lives, and it too will likely reshape the way we think about and conduct social science research, opening up new avenues for connection and understanding in the process as it did in the well-being assessment approach described here.

## Supplemental Material

### Participant Recruitment and Selection Process

The following describes the project team's approach for recruiting participation of commercial fishermen and commercial passenger fishing vessel (CPFV) owner/operators for a series of small group discussions. The process design was developed with an aim to compose focus groups that were representative of the unique demographics of each port or region.

#### Group Composition

Feedback shared by Key Communicators<sup>2</sup> illustrated the need for each focus group to be reflective of the diverse demographics that existed within each port. Since this was a state project linked to nearshore marine protected areas (MPAs), we limited participants to those who participated in at least one state water fishery.

Based on California Department of Fish and Wildlife (CDFW) data, demographic criteria the project team considered included:

- Occupation (e.g., commercial fisherman, CPFV owner/operator)
- Age
- Gender
- Years experience fishing in California (before/after MPA implementation)
- Type and number of fisheries of participation
- Scale of operation (e.g., ex-vessel revenue, boat size, CPFV trips)

Finally, in selecting participants, we considered three additional factors: (1) their ability to effectively and productively communicate with other members of their community in a focus group setting, (2) their access to sufficient technology to participate in a virtual focus group, and (3) their ability to consider the state of their fishing community beyond their own individual experience. The goal of the conversation was to get fishermen to discuss the state of their port or fishing community as a whole.

#### Focus Group Size

*Commercial, and CPFV (Online): 3-10*

#### Approach to Developing a Participant List in Each Port or Region

##### *Port Demographic Profiles*

- We used the CDFW landings data to develop demographic distributions and profiles of each port based on the criteria listed in group composition above (e.g., ex-vessel value, fisheries of participation, age)

- These demographic profiles were compared to focus group invitees list to ensure appropriate representation and completeness

##### *Project Team (PT) Contacts*

- PT had significant experience working with California's fishing communities and their own contact lists to consider for recruitment to focus groups
- PT used existing contact lists to develop a list of potential invitees and identify Key Communicators or liaisons within each port with which to work

##### *Port Liaisons (PLs)*

- We utilized local liaisons (minimum of two) within each port who were known to be leaders, ideally across fisheries
- These individuals acted as point-people within each port to solicit participation based on identified criteria; shared list with PT
- PLs nominated and, in some cases, recruited participants

##### *Draft Invitee List*

- Developed a draft invitee list based on suggestions from PT, PLs, and CDFW data
- Compared the demographics of the invitee list with the demographic profile of the port and determined if any key groups or sectors were missing; any missing demographics were noted in our final reporting
- When needed, added additional invitees to the list to make up for any missing demographic groups; these individuals were determined by PL or PT suggestions or by reviewing the CDFW data

##### *Final Invitee List*

- Finalized an invitee list that included wide representation from major demographic groups
- Reached out to invitees and determined availability
- Filled in additional invitees with similar demographics for those who were not able or willing to attend
- Invited at least two participants more than the minimum number, as it was possible that issues would arise and not all would be able to make it on the day of the focus group

##### Screening Process

Once we had a draft list of invitees informed by PT, PLs, and CDFW data, we reached out to participants to screen them for possible participation.

- Determined their willingness and availability to participate

- Determined their access to appropriate technology for virtual participation
- Determined if they needed a Zoom/technology training prior to the focus group
- Determined their ideal mode of communication related to the project: phone, text, or email

### Recruiting Process

Once an invitee list was developed, the PT reached out to invitees individually to communicate more information about the project and determine their interest and availability. PLs assisted with initial contact to some invitees, but PT followed-up shortly after with personalized emails and phone calls/text messages to provide more information. PT members used a combination of phone calls and emails to reach out to invitees and communicate information about the project. Information shared with all invitees included:

#### Background

- The purpose of the study
- Who wants the information, who is sponsoring the study
- What they will do with the information
- Who we want to hear from
- Why the study is important

#### Selection Process

- How focus group participants are being solicited
- How you got that person's name
- Why you are inviting them
- What will be done with results; who will benefit from

- the study
- How they might benefit from participating (What is the incentive for participating?)

#### Procedure

- Dates of focus groups
- Process for confirming participation
- Whether to leave phone messages

#### Focus Group Process and Information

- Answers to frequently asked questions
- Focus group question list
- List of invitees
- Consent form

#### Follow-up

- Personalized follow-up email (date/time of focus group)
- Reminder phone calls or texts (date/time of focus group)

#### Contact

- Contact information for questions

#### Compensation

Commercial fishermen received \$175 per commercial fisherman (\$275 for pilot port participants).

CPFV Owner/Operators received \$175 per CPFV owner/operator.

**Table 1. Commercial Fishing Focus Group Questions**

Topic	Question	Responses
<b>Well-being Indicators</b>		
<b>Well-being, Environmental</b>		
1a. Marine Resource Health—Present	Overall, how would you rate the current health and sustainability of the marine resources on which fishermen from this port rely?  Consider: - Abundance - Diversity - Size/weight - Habitat - Water quality	(1) Very Low (2) Low (3) Neutral/Medium (4) High (5) Very High
	*Facilitator to acknowledge there are natural fluctuations and variation, but to try to do their best to describe overall*	

**Table 1. Commercial Fishing Focus Group Questions**

Topic	Question	Responses
1b. Marine Resource Health—Future Concerns	Overall, how worried are fishermen from your port about the future long-term health and sustainability of the marine resource populations on which you rely?  Consider: - Effectiveness of management - Future ocean changes	(1) Extremely Worried (2) Moderately Worried (3) Somewhat Worried (4) Slightly Worried (5) Not at all Worried
<b>Well-being, Economic</b> 2a. Access to Harvestable Resources	Overall, how would you rate your port in terms of the level of access that fishermen have to marine resources to support the local fishing fleet?  Consider: - Amount (e.g., lbs.) - Diversity of fisheries - Restrictions that inhibit access - Equity	(1) Very Insufficient (2) Insufficient (3) Neutral (4) Sufficient (5) Very Sufficient
2b. Income from Fishing	Overall, how would you rate the income that fishermen from your port earn from fishing in terms of supporting livelihoods?  Consider: - Need to take on other jobs - Costs compared to revenue - Income earned compared to similar types of jobs	(1) Very Insufficient (2) Insufficient (3) Neutral (4) Sufficient (5) Very Sufficient
3a. Markets	Overall, how would you rate the quality of the markets to which fishermen from your port are able to sell their catch?  Consider: - Price - Ease of use - Stability/consistency/reliability - Diversity/choice	(1) Very Poor (2) Poor (3) Neutral/Acceptable (4) Good (5) Very Good
3b. Infrastructure	Overall, how would you rate the state of infrastructure and services that support commercial fishing in your port?  Consider: - Availability of key infrastructure - Reliability and maintenance - Financial support for infrastructure  *Facilitator to note that examples of key infrastructure might include: docks, fuel, ice, dredging, loading and unloading equipment, processors, haul-out facilities, gear storage, etc.*	(1) Very Poor (2) Poor (3) Neutral/Acceptable (4) Good (5) Very Good
3c. COVID-19 Impacts	How disruptive do you think COVID-19 has been to your port's fishing operations?	(1) Very Low (2) Low (3) Neutral/Medium (4) High (5) Very High

**Table 1. Commercial Fishing Focus Group Questions**

Topic	Question	Responses
<b>Well-being, Social</b>		
4a. Labor/New Participants	<p>Overall, how would you rate your port in terms of being able to recruit new entrants to the industry and being able to retain current participants?</p> <p>Consider:</p> <ul style="list-style-type: none"> <li>- New entrants vs. attrition</li> <li>- Quality of labor pool</li> <li>- Barriers to entry</li> <li>- Longevity</li> </ul> <p>*Facilitator to note that respondents can consider captains and crew in their answers*</p>	<p>(1) Very Poor (2) Poor (3) Neutral/Acceptable (4) Good (5) Very Good</p>
4b. Job Satisfaction	<p>Overall, how satisfied do you think fishermen from the port are with their jobs in the fishing industry?</p> <p>Consider:</p> <ul style="list-style-type: none"> <li>- Sense of fulfillment/purpose</li> <li>- Sense of job security</li> <li>- Level of stress</li> <li>- Extent to which positives outweigh negatives</li> </ul>	<p>(1) Very Dissatisfied (2) Dissatisfied (3) Neutral (4) Satisfied (5) Very Satisfied</p>
5a. Social Relationships— Internal	<p>Overall, how would you rate the strength of social relationships (or social capital) within your port?</p> <p>Consider:</p> <ul style="list-style-type: none"> <li>- Leadership</li> <li>- Trust</li> <li>- Engagement</li> <li>- Sense of shared identity</li> <li>- Ability to work and gather together</li> </ul>	<p>(1) Very Weak (2) Weak (3) Neutral (4) Strong (5) Very Strong</p>
5b. Social Relationships— External	<p>Overall, how would you rate the strength of the port's relationship with external groups who could help support community needs?</p> <p>Consider:</p> <ul style="list-style-type: none"> <li>- Engagement in policy processes</li> <li>- Relationships with government, NGOs, others</li> <li>- Community support</li> </ul> <p>*Facilitator to note that government includes local, state, federal government*</p>	<p>(1) Very Weak (2) Weak (3) Neutral (4) Strong (5) Very Strong</p>
<b>Well-being, Overall/Additional Comments</b>		
6. Overall/Open-ended	<p>Is there anything not captured above that you would like managers and other readers to know about your fishing community/industry?</p> <p>What do you think federal and state managers could do to better support California's fishing communities?</p> <p>What do you think members of your fishing industry could do to support the well-being or sustainability of your fishing community?</p>	Open-ended

**Table 1. Commercial Fishing Focus Group Questions**

Topic	Question	Responses
<b>MPA-Specific Indicators (MPAs)</b>		
<b>MPAs, Outcomes/Effects</b>		
7. MPA Ecological Outcomes	<p>Overall, how would you rate the effect that the California MPA network has had on marine resource health in your area?</p> <p>Consider MPAs Effects On:</p> <ul style="list-style-type: none"> <li>- Abundance</li> <li>- Diversity</li> <li>- Size</li> <li>- Habitat</li> <li>- Market quality</li> <li>- Other</li> </ul> <p>*Remind the group to focus on trying to tease out effects from MPAs against other non-MPA related ocean changes that have been occurring since MPAs implemented and overall marine environment quality was already discussed in previous questions*</p>	<p>(1) Strongly Negative</p> <p>(2) Negative</p> <p>(3) No Effect/Neutral</p> <p>(4) Positive</p> <p>(5) Strongly Positive</p>
8a. MPA Livelihood Outcomes	<p>Overall, how would you rate the effect that the MPA network has had on the ability for fishermen from your port to earn a living/gain income from fishing?</p> <p>Consider MPAs Effects On:</p> <ul style="list-style-type: none"> <li>- Landings</li> <li>- Cost</li> <li>- Income</li> <li>- Number of participants</li> </ul>	<p>(1) Strongly Negative</p> <p>(2) Negative</p> <p>(3) No Effect/Neutral</p> <p>(4) Positive</p> <p>(5) Strongly Positive</p>
8b. MPA Effects—Overall	<p>What other types of effects or impacts have fishermen from your port experienced from MPA implementation?</p> <p>Possible Effects to Consider:</p> <ul style="list-style-type: none"> <li>- Change in ability to fish in or go to traditional grounds/areas</li> <li>- Change in travel distance to fishing grounds</li> <li>- Change in safety or risk associated with fishing</li> <li>- Change in crowding/competition in certain areas</li> <li>- Change in ability to serve/fulfill their markets</li> <li>- Change in fisheries of participation or dominance in port</li> <li>- Change in participation in local industry (fishermen leaving industry or moving ports)</li> <li>- Effects on political engagement, organization, and activity</li> <li>- Effects on relationships within and external to fishing community</li> <li>- Other</li> </ul> <p>*Note question to be incorporated as part of discussion related to Question 8a*</p>	Open-ended
9. MPA Effects—MPA Specific	<p>Which MPAs have had the most impact (positive or negative) on fishermen from your port and why?</p> <p>*Facilitator will show an interactive map of the MPAs to aid this discussion*</p>	Show a map of the different MPAs and allow them to select

**Table 1. Commercial Fishing Focus Group Questions**

Topic	Question	Responses
<b>MPAs, Management</b>		
10a. MPA Management	Overall, how satisfied do you think fishermen from your port are with the management of the MPA network?  Consider: - Fairness - Communication of information/decisions - Opportunities for fishermen involvement - Effectiveness in achieving goals	(1) Very Dissatisfied (2) Dissatisfied (3) Neutral/Neither (4) Satisfied (5) Very Satisfied
10b. MPA Monitoring	Overall, how satisfied do you think fishermen from your port are with the monitoring of the MPA network?  Consider: - Design of the studies - Communication of results - Collaboration with fishermen - Inclusion of fishermen's perspectives	(1) Very Dissatisfied (2) Dissatisfied (3) Neutral/Neither (4) Satisfied (5) Very Satisfied
10c. MPA Enforcement	Overall, how satisfied do you think fishermen from your port are with the enforcement of MPAs?  Consider: - Clarity of the rules and regulations - Fairness in CDFW's interpretation of the rules/regulations - Effectiveness	(1) Very Dissatisfied (2) Dissatisfied (3) Neutral/Neither (4) Satisfied (5) Very Satisfied
<b>MPAs, Overall/Additional Comments</b>		
11. MPA Overall	Any additional comments or concerns about the MPAs and MPA management you would like to communicate?	Open-ended
<b>Feedback on Virtual Process</b>		
12a. Satisfaction with the Virtual Process	Overall, how satisfied were you with your experience participating in this virtual focus group?	(1) Very Dissatisfied (2) Dissatisfied (3) Neutral/Neither (4) Satisfied (5) Very Satisfied
12b. Willingness to Participate in Virtual Process in Future	Would you be open to participating in a virtual focus group or meeting like this in the future?	(1) No (2) Maybe (3) Yes
12c. Process Open-ended	Can you share any additional comments about your experience in this virtual focus group? What do you think are some of the pros and cons of having a conversation like this online rather than in-person?  *Note question to be incorporated as part of discussion related to Question 12a and 12b*	Open-ended



**Table 2. Commercial Fishing Focus Group Location, Date, Length, and Number of Participants**

Port	Date	Focus Group Length	Number of Individuals Contacted	Number of Focus Group Participants
Crescent City <sup>^</sup>	August 6, 2020	3:30:32	9	4
Trinidad	October 27, 2020	3:37:01	5	3
Eureka	October 8, 2020	3:52:15	10	8
Shelter Cove	October 19, 2020	2:59:00	7	4
Fort Bragg/Albion	November 5, 2020	3:33:18	13	5
Point Arena	February 1, 2021	3:13:13	7	4
Bodega Bay <sup>^</sup>	July 9, 2020	4:18:01	11	6
San Francisco Area Ports	October 26, 2020	3:15:35	5	4
Princeton—Half Moon Bay	November 19, 2020	3:15:57	11	7
Santa Cruz	December 8, 2020	3:46:01	11	5
Moss Landing	December 16, 2020	3:30:41	10	4
Monterey <sup>**</sup>	-	-	7	-
Morro Bay—Port San Luis	October 29, 2020	3:31:30	12	4
Santa Barbara <sup>^</sup>	August 31, 2020	3:43:04	11	4
Ventura/Channel Islands Area Ports	September 16, 2020	3:30:28	16	3
Los Angeles/Long Beach Area Ports <sup>^</sup>	September 4, 2020	3:24:10	11	6
Orange County Area Ports	September 9, 2020	3:47:53	9	6
Oceanside <sup>+</sup>	April–May 2021	-	6	3
San Diego Area Ports	March 2, 2021	2:41:29	10	5
Total				85

<sup>^</sup> Early focus groups that did not include the COVID-19 impacts question

\* Pilot focus group

\*\* We were unable to hold this focus group.

+ Due to participant preference, this was not held as a focus group but separate one-on-one conversations with three individuals; therefore, the scores do not as clearly reflect the deliberative component.

### Well-being Index Creation

We first created three sub-indices for well-being by averaging participants' responses to all questions within those categories (Table 3). Individual participant sub-indices were then averaged

with others' who were in the same focus group to produce port-level sub-indices. We averaged participant-level well-being sub-indices, then averaged those again with others who were in the same focus group. This resulted in one well-being index for the port. All well-being sub-indices and indices are shown in Table 4.

**Table 3. Well-being Index Creation**

Commercial Fishing Focus Group Question Topic	Sub-index	Index
Marine resource health—present	Environmental	Well-being
Marine resource health—future concerns		
Access to harvestable resources	Economic	
Income from fishing		
Markets	Social	
Infrastructure		
Labor/new participants		
Job satisfaction		
Social relationships—internal		
Social relationships—external		

**Table 4. Well-being Sub-indices and Indices**

Port	Environmental Sub-index	Economic Sub-index	Social Sub-index	Well-being Index
Crescent City	3.50	1.69	1.88	2.35
Trinidad	4.00	3.67	3.17	3.61
Eureka	2.29	1.50	2.54	2.11
Shelter Cove	3.00	1.63	3.44	2.69
Fort Bragg/Albion	2.30	2.30	3.30	2.63
Point Arena	2.75	2.50	3.38	2.88
Bodega Bay	2.42	2.58	3.04	2.68
San Francisco Area Ports	2.63	2.94	3.06	2.88
Princeton - Half Moon Bay	2.86	2.93	2.43	2.74
Santa Cruz	2.70	2.20	2.40	2.43
Moss Landing	2.50	2.31	3.19	2.67
Monterey**	-	-	-	-
Morro Bay - Port San Luis	4.13	3.13	3.44	3.56
Santa Barbara	3.63	3.63	3.75	3.67
Ventura/Channel Islands Area Ports	4.00	2.83	3.17	3.33
Los Angeles/Long Beach Area Ports	2.67	2.38	2.29	2.44
Orange County Area Ports	2.83	1.96	2.92	2.57
Oceanside	2.83	3.08	2.08	2.67
San Diego Area Ports	2.80	2.90	2.40	2.70

\*\* We were unable to hold this focus group.

## Select Commercial Fishing Focus Group Quotes Related to Environmental, Economic, and Social Well-being Topics

### Environmental

#### Marine Resource Health—Present

“The salmon are in trouble in their riverine and estuarine habitat, and the whole effort to put a whole lot of money into MPAs just doesn’t deal with the salmon problem, and the state has allowed [salmon] to go down. [The state was] supposed to double the salmon populations by 2000; they crashed instead. There’s a lack of will for enforcement of water law in the rivers.”—Eureka commercial fisherman

“The red urchin industry up here is in complete disaster. Our 2019 harvest for the Fort Bragg area was 1 percent of what it was in 2014, so that has been a pretty steady decline. So far this year, we’re almost to 2 percent of 2014, so we’re doing a little bit better. But that is no comparison to how well things were before this [urchin] disaster.”—Fort Bragg/Albion commercial fisherman

“The pressures aren’t on the actual fishery or on the species. It’s more on the regulations surrounding fishing—species like [Dungeness] crab, for instance, the pressure is on whale entanglement, domoic acid, fair starts, and regional disputes. ... There’s pressures everywhere else, but the actual crabs are doing pretty well. So that particular fishery is an example of how I think we all feel, and salmon is the same way. It was actually a pretty good salmon season, but there is the worry

of water and...the politics around water, which is a huge issue.”—San Francisco Area Ports commercial fisherman

“The ebbs and flows of everything is just something that we’ve grown accustomed to and have expected. I think the question becomes: are there factors, whether it’s climate or anthropogenic forces, that are making it more dramatic?”—Moss Landing commercial fisherman

“The ocean looks healthy to me. I mean, the RCA [Rockfish Conservation Area] has been closed for so long now, [there’s an] abundance of rockfish in the shallows that never used to be there.”—Morro Bay—Port San Luis commercial fisherman

“The urchin stock, especially the little on the Los Angeles coast area, has been hit really hard for reasons of closed areas; they took away part of our fishing areas and then other possible [areas] that have caused other boats to migrate south from Santa Barbara and up—coming down and work in our areas and decimating some of the areas that I don’t think will come back. So that’s a big worry and concern.”—Los Angeles/Long Beach Area Ports commercial fisherman

#### Marine Resource Health—Future Concerns

“It’s hard to separate the resource worries with the management worries [and] regulations coming down on fishermen. ... I know fishermen are worried about the industry overall... I don’t think the resources are going away... but I do worry about how we’re going to get regulated out of business—that’s a concern. So I don’t know how you separate the two when you’re worried about the industry. But as far as a resource, I think it’s gonna be fine, but I

know fishermen are worried.”—Crescent City commercial fisherman

“The kelp serves as a nursery for a lot of fisheries. So even though some fisheries may still be doing well, I think that if in the long-term the kelp doesn’t come back, it’ll have more widespread effects.”—Fort Bragg/Albion commercial fisherman

“Ocean conditions are the main thing that are causing our worry because domoic acid’s caused delays in our crab season for years and quality keeps the crabs too light to start and our seasons get shorter every year, so that’s a main worry. And then we all saw the starfish die off, so how fragile is life in this ocean? Could the crabs be next? We don’t know, so you’d be a fool not to be worried, being a fisherman.”—Point Arena commercial fisherman

“I think people are worried [about] water issues; we aren’t getting the water that we need for the juvenile crabs and salmon. So there’s a lot of worry about policy, politics, and regulation, and I think that goes hand in hand with the populations of the species right now.”—San Francisco Area Ports commercial fisherman

“I do have some concerns for the future that we may reach some type of tipping point when it comes to ocean acidification and stuff like that. I think we’ve all noticed that the world has been a changing place. I don’t know how that’s going to relate back over to the species that we rely on.”—Santa Cruz commercial fisherman

## Economic

### Access to Harvestable Resources

“It’s extremely hard [to participate in multiple fisheries]. I would say if you are a person that just wanted to get off and start fishing, that would be near to impossible. ... Live fish permits are a lot of money, everything’s a lot of money. So just to go for it and then not be successful [is a risk]. Crab didn’t open for four months because of the domoic acid [and] we went four years ago in May, so if that’s someone’s only fishery, you’re kind of screwed.”—Point Arena commercial fisherman

“The permitted system is very constraining. It really sort of keeps fishermen from moving from one fishery to the next in a way [that] was essential as a fisherman to always be changing and to always be varying the species that you’re targeting to follow that curve of those upswings and downswings. ... These permit structures are very rigid and it’s not to say that they’ve been a bad thing; I think it’s obviously been a good thing in terms of recovering a lot of the resources and bringing back a lot of our overfished species. But it’s sort of left a scar in our fishing communities in terms of the flexibility that fishermen really need to make a living.”—Moss Landing commercial fisherman

### Income from Fishing

“I started out full-time fishing and then I took on another job. So I do get about half my income from fishing and the other half from the other job. I see some guys that are full-time that I’m friends with and, yeah, you can definitely make a living full-time, but everybody has a different standard of living.

Guys have different work ethics and different financial means and for some guys, it seems like they really struggle to make ends meet and there’s some that do really well.”—Ventura/Channel Islands Area Ports commercial fisherman

## Markets

“I don’t think a rockfish should be worth twenty-five cents. We can get paid a heck of a lot more than that, but trying to find those markets is hard to do. And the same comes to crab as well. ... We have a lot of crab that comes into this port... and the vast majority also has to succumb to what the bigger processors are willing to pay. And generally that is, you know, lower than what we possibly could get. So market availability is, I guess, there, but for a good, reasonable market? No, not really there.”—Eureka commercial fisherman

“I have dabbled in it [direct sales]. Typically, I would love to just come in, load to the market, and be done with it and go fishing the next day. But you have to take the time to sell the product. So that cuts into your fishing time. I don’t want to do it. I would much rather go with the buyers. But if the buyers are loaded and you’re stuck with trying to make a living and having to take and sell to the public and maybe spend that extra time, the price that you sell to the public is substantial.”—San Francisco Area Ports commercial fisherman

## Infrastructure

“The infrastructure—definitely, there’s room for improvement. I don’t know any port that there isn’t right now, and it used to be—it wasn’t too long ago—any port you went into, there was always the infrastructure to keep you going. And it’s pretty much fallen apart up and down the whole coast. Like I say, I travel up and down the coast. There’s only a couple of ports that I could see on the whole West Coast that could actually handle it and even then, you could be put in line to wait, but you’ll eventually get what you need so you could keep going. But some of these ports, California being the worst, can’t keep up with any influx of vessels coming into any one spot.”—Moss Landing commercial fisherman

“The infrastructure is problematic because without the infrastructure, you can’t have the fishing. And if you don’t have the fishing, you can’t have the [funding to support] infrastructure.”—Eureka commercial fisherman

## Social

### Labor/New Participants

“There’s three or four boats that are going to retire this year because of old age. They’re done doing it.... To be honest, you got to be almost crazy to get into this industry right now. It’s financially irresponsible. I mean, I’ve made good money, and really, this is all I can do. This is what I do. And so when [the season] gets shut [down early], [it’s] devastating to my family, devastating... I can’t even explain to you. So for somebody to get into this industry right now, you would have to be crazy or [at least] know what the possibilities are. You can make good money, but there’s a possibility that you’re going to be spending a lot of money and not making nothing and be left high and dry without anything. You’re gambling, big time.”—Trinidad commercial fisherman

“I think the fishermen are more endangered now than the resource itself. And I think we could actually largely say that as an industry, as a whole, we’re in a critical moment right now where all these other forces, including the regulatory management aspects, the gentrification of our ports, the markets that are driving the economies of our fishing industries... those are all things that I think are putting fishermen out of work and keeping new fishermen from coming into the industry. ... And the permitting of all of our fisheries becomes a really significant barrier to entry.”—Moss Landing commercial fisherman

“The problem is the younger guys don’t have the money to buy into the fishery right now. If you’re going to do it right, you need a couple hundred thousand dollars to buy a permit, a good boat, and good gear to maybe be competitive, and that’s as the old guys get out because of maybe their age and their limitations. You don’t have the younger guys moving in behind them because they don’t have the resources.”—Orange County Area Ports commercial fisherman

“I think it’s hard [for] crew members. The seasonality of the job is brutal. [During] lobster [season], you’re rich. The next three months now, keeping a crew member, he’s going to make nothing. So you work twelve to fifteen hours a day for two months and then [it’s] ‘I need you to take three months off and not make any money and then

come back and start lifting heavy stuff.’ It’s hard to retain crew.”—San Diego Area Ports commercial fisherman

**Job Satisfaction**

“I think there’s a wide range, everywhere from people who are making a decent living like me and who feel like they have a great life. So I would say I’m very satisfied, even though it’s a struggle and my stress is through the freakin’ roof. I’m still satisfied with my job because I have a lot of fulfillment and purpose and I do have a secure job: no one is going to fire me... stress is high, but other than that, it’s a good job.”—Moss Landing commercial fisherman

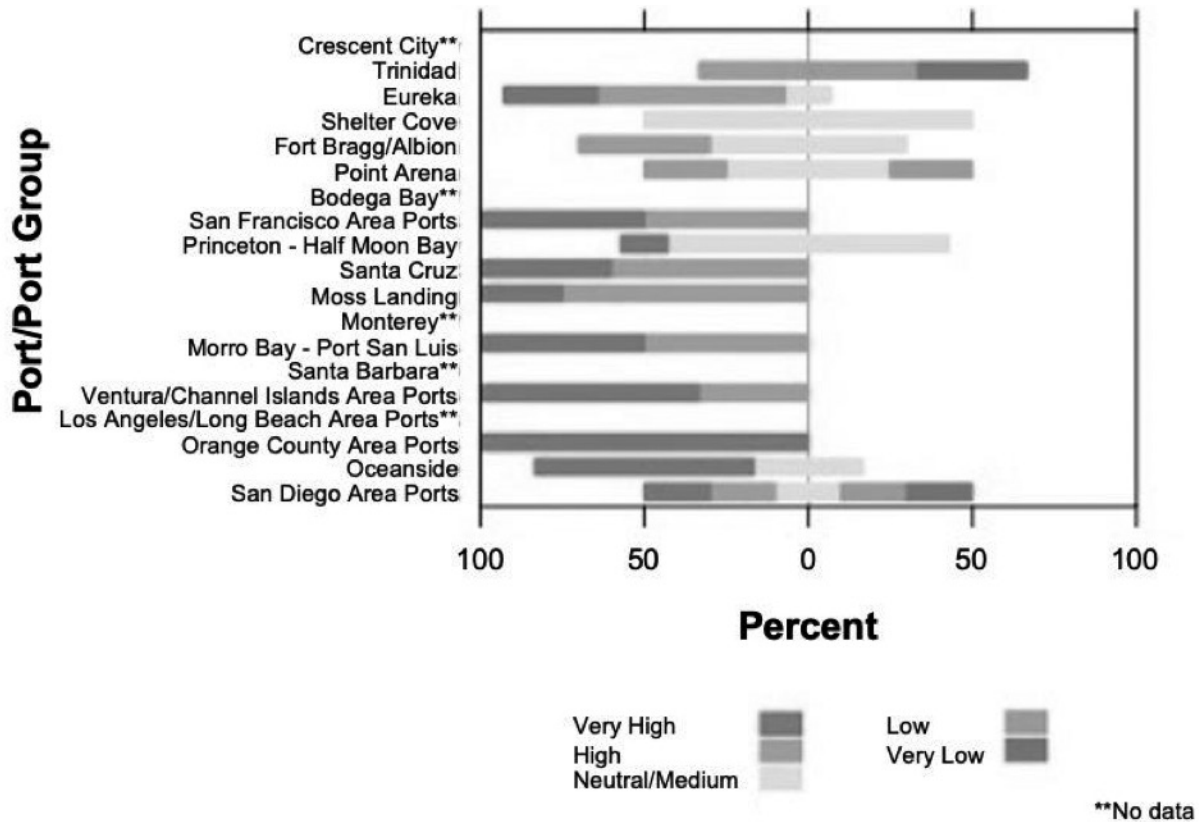
**Social Relationships—Internal**

“We’re still brothers with each other. And if somebody needs help with their boat, you’re going to go to help them. That takes precedence over you making money for that day or whatever you were going to do.”—Shelter Cove commercial fisherman

“There’s some strong relationships within the fishery, like a real bond there. Being a younger guy, I’ve definitely had a handful of older fishermen [who are] like mentors that took me under their wing at the beginning, so I’d describe those relationships as strong. And I think that’s really

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**Figure 5. How Disruptive Do You Think COVID-19 Has Been to Your Port’s Fishing Operations? High Values Are Located Left of the 0 y-axis, and Low Values Are Located Right of the 0 y-axis.**



important for passing the fishing heritage on, especially for me because I don't come from a fishing family. So if I hadn't landed in the lap of a few of these guys who really showed me the ropes, I wouldn't be where I'm at."—Ventura/Channel Islands Area Ports commercial fisherman

## Social Relationships—External

"In terms of the agencies, it's very hard to educate them about how important the commercial fishery is. I think they hear a lot of stuff from NGOs [non-governmental organizations] that don't like us and don't want to see us fishing, or want us to fish in the manner that they approve of which would mean that we would all go out of business, so that's all problematic."—San Francisco Area Ports commercial fisherman

"I always thought that people should know more about the wharf and the fishermen there and the culture there. I think it used to be like that, they used to have parades and just a lot of community involvement down there, which has kind of gone away. So I'd like to see more of that to counter the disinformation that the public is getting from the NGOs and the media. That's kind of our biggest problem."—San Francisco Area Ports commercial fisherman

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## Notes

<sup>1</sup>The term "fishermen" is used to denote people who fish. In the California fishing occupational community, "fishermen" is preferred regardless of gender (Hackett, Richmond, and Chen 2017).

<sup>2</sup>For the purposes of this project, Key Communicators (KCs) were defined as recognized leaders who had a thorough understanding of the perspectives and priorities of their respective communities/affiliations and were interested and willing to act as a conduit of information about policy and management processes through their networks and communications channels.

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