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Using Focus Groups in Delphi Method to Conduct Participatory Research: Implications for Extension

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Introduction

The COVID-19 pandemic created restrictions for in-person interactions and expedited shifts towards virtual means of social science research and evaluation. As a result of social distancing, an unexpected opportunity emerged to explore newer ways of participatory work. We used the virtual focus groups and survey method mainly to adapt to the social distancing restrictions implemented during the pandemic. However, the virtual format provided us with equally valid data and revealed the potential for this innovative method to be used in the future. Extension professionals can use the innovative Delphi method to facilitate a unique collaborative space for stakeholders from dispersed geographic locations or those unable to convene in person for various reasons.

A traditional Delphi method typically aims to utilize expert knowledge to find consensus on a complex issue (Niederberger & Spranger, 2020; Warner, 2014; Dalkey & Helmer, 1963), and uses aggregated group answers from questionnaires to iteratively create new questionnaires to reconsider judgments and revisit when appropriate. The Delphi process is conducted in multiple rounds until consensus has been achieved, as defined by a convergence of top rankings on questionnaires taken independently; however, typically three rounds are sufficient in reaching consensus (Diaz et al., 2023; Hsu & Sandford, 2007).

The Delphi method is an effective tool for communicating opinions among stakeholders and for achieving agreement on a program or project priorities and objectives (Delp et al., 1977; Diaz et al., 2018; Turoff & Linstone, 2002; Warner, 2015). The most common applications of the Delphi method are to solicit expert opinion on a studied subject, while avoiding direct

confrontation among people with opposing views (Barrett & Heale, 2020). Examples of previous applications of the Delphi method in Extension include using it to predict research topics of interest among farmers (Polush et al., 2016), future relationships and outcomes in business, governmental and organizational contexts (Ludwig, 1997), stakeholder agreement among extension workers, researchers, and professionals (Lorenzo et al., 2003), and collaborative development of a strategic plan for Extension (Warner et al., 2017). The Delphi method's strength is its capacity to utilize points of disagreement to perform deeper analysis of patterns and trends in stakeholders' opinions (Turoff & Linstone, 2002).

Our Innovative Method

We modified the traditional Delphi method by adding virtual focus groups to enhance opportunities for qualitative community feedback, multi-stakeholder conversations, and building mutual understanding among diverse stakeholders. Through the iterative discussion followed by a survey at the conclusion of each focus group, we intended to design a safe space for nuanced dialogue and mutually beneficial learning, creating opportunities for in-depth discussion and even potential disagreement among stakeholders, and an opportunity to anonymously express opinions in the survey following each focus group.

An expert panel identified by the research team convened at three consecutive focus group sessions to exchange experiences, overcome potential misconceptions by educating each other on the subject, and collaboratively identify priorities. The added focus group component was integral in informing participants' perspectives captured in succeeding surveys (Figure 1). By bringing together diverse stakeholders, the focus groups created a unique venue for participants to challenge their initial perspectives. The modified Delphi method helped create a collaborative space for diverse participants to share their thoughts and explain their perspectives

with each other. In contrast to traditional Delphi, the innovative Delphi method fit well with our community-engaged research goals, providing deeper qualitative data to complement and add nuance to traditional Delphi survey results.

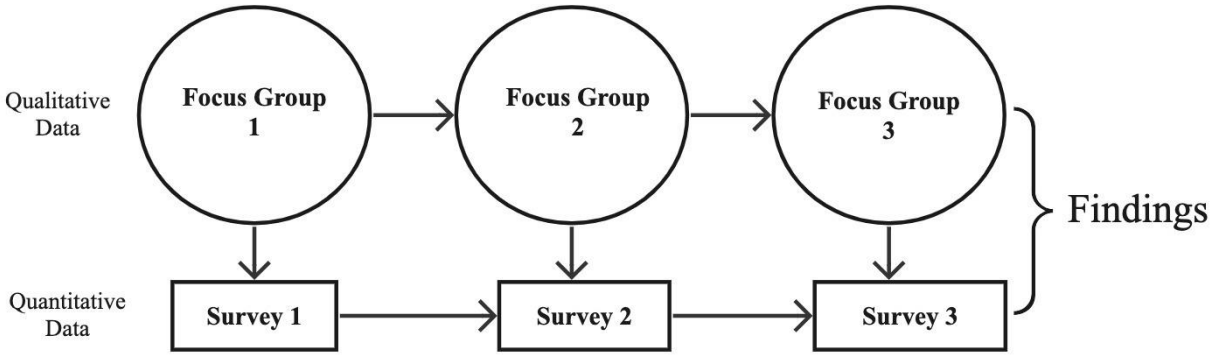

Figure 1. Innovative Delphi Method

Uniqueness of our method is seen in Table 1.

Table 1.

Comparison of Modified Delphi Method with Traditional Delphi and Focus Group Methods

	Traditional Delphi Method	**Focus Group Method**	**Modified Delphi Method**
What it is	An iterative, usually a three-round procedure that begins with an open-ended elicitation round followed by two close-ended survey rounds that ask the expert panel to rate or rank items generated from round one (Niederberger & Spranger, 2020)	A planned, relaxed, naturalistic dialogue among a small group of people on a specific topic (Israel & Galindo-Gonzalez, 2008)	A planned and systematic combination of focus groups and surveys after each round of Delphi
When to use	To develop and achieve expert consensus on a complex issue or when available knowledge is incomplete or subject to uncertainty	To identify problems and encourage divergent thinking in a group setting	To understand the needs, barriers, issues in-depth rather than getting a ranking of the Delphi items

Main feature	Building consensus	Identifying views and needs	Getting richer contextual information in addition to achieving consensus
Who is at the table	People with organizational affiliations or expertise in the area	People with similar characteristics and lived experiences	Experts and community stakeholders with lived experiences
Research design	Predominantly quantitative	Qualitative	Mixed
Group size	15-50	10-12	12 (in our case)
Main benefit	Achieves consensus which can be challenging when working on complex issues	Gets rich and in-depth information on the common needs, issues, barriers affecting a group	Gaining richer contextual information and also expert consensus
Limitation	Not recommended for outcomes evaluation	Not recommended for decision-making	More time-consuming to run and analyze data
Examples	Used in health sciences in the areas of health and well-being, health care, palliative care, health promotion and reporting, clinical sector, medical education, and other areas	Used to conduct a community needs assessment survey in schools, among community members, and other public settings	Unique instances of combining traditional Delphi and focus groups to "integrate perspectives of practitioners and local stakeholders" (Canessa et al., 2022)

Project Background

The innovative Delphi method concluded the research stage of a three-year community-based farmers market study to identify the nexus of barriers and possible interventions to increase access to farmers markets in the [name of geographic location] for low-income community residents and people of color. The goal of the larger study was to increase accessibility of low-income shoppers and communities of color to healthy, fresh food sold at the farmers markets.

The research team included a county-based extension academic, community partners, an extension evaluation specialist, graduate student researchers, bilingual and Spanish interpreters, and a breakout group note taker. The team also consulted with a national extension expert on the Delphi method.

Three consecutive Delphi focus groups followed by surveys with an expert panel of farmers market vendors, low-income shoppers, community advocates, and farmers market managers were conducted online over Zoom and Qualtrics in winter 2022. Participants were selected using purposive sampling based on their connection to the topic of study, local knowledge, and lived experiences of low-income and Latinx community members in [county name] County with 2 to 4 individuals per stakeholder group. Participants were English and/or Spanish-speaking, with English and Spanish focus group facilitators, simultaneous interpretation, and translation of the slide deck and surveys provided.

The first focus group round served as an introduction of the preliminary research findings and ranking of barriers and interventions. Each focus group session concluded with an online Delphi survey (Figure 1) administered in Qualtrics, which provided participants an opportunity to express their opinions anonymously. Surveys asked participants to rank barriers and necessary changes, or interventions, to increase access of low-income consumers and people of color to the studied farmers markets. Barriers and interventions were ranked on a 5-point Likert-type scale with *1 = Disagree, 2 = Somewhat disagree, 3 = Neither disagree nor agree, 4 = Somewhat agree, 5 = Agree* for barriers and *1 = Unimportant, 2 = Somewhat unimportant, 3 = Neither unimportant nor important, 4 = Somewhat important, 5 = Important* for interventions. Participants' consensus on *barriers* and needed *interventions* was defined as more than *2/3* of respondents agreeing on *4 (Somewhat important or Somewhat agree)* or *5 (Important or Agree).*

The second and third focus group rounds provided space to exchange and reconsider opinions, express disagreements, and revise responses based on new information. As a result, a final set of key barriers and interventions was identified in the third round based on 2/3 consensus among study participants (Tables 2, 3).

Reflections on Our Project's Use of the Method

The use of a virtual platform helped create an inclusive space for a diverse panel of experts. Although the project team was concerned about the risk of excluding potential participants due to limited access to technology, none of the invited study participants experienced noticeable challenges with access to and use of technology. The participants shared satisfaction with the virtual format and appreciation for the opportunity to participate in an inclusive study in part because of the virtual means.

Furthermore, the virtual delivery of the innovative method enabled researchers to bring together stakeholders from diverse geographies, language backgrounds, and roles for unique dialogue. For instance, a vendor-participant in one of the focus groups expressed appreciation for the opportunity to hear from the low-income consumer-participant about their experience shopping at the farmers market. The referenced vendor stated that they had never had an opportunity to hear about shopper experiences at the farmers market. In this way, the virtual focus group followed by a Delphi survey created a unique opportunity for diverse farmers market stakeholders to convene and exchange their perspectives on the subject.

Some limitations were identified. Although we performed a brief evaluation with participants and the planning team, our study could benefit from a more comprehensive evaluation and further iterations of the innovative method. Future researchers may want to

compare results from the innovative method, the focus group method alone, and the traditional Delphi method alone for their contexts and use the one that best fits their needs.

Evaluation and Outcomes of the Innovative Delphi Method

The innovative Delphi method was evaluated in several ways: participants provided their feedback on the focus group process by completing a brief evaluation poll with four questions (Table 4) and answering questions during an open-ended discussion (Table 5), and the study team provided written and verbal feedback (Table 6) following the final round of focus groups. Upon collecting the evaluation data, our research team convened to collaboratively interpret evaluation results and to develop a plan for adapting the modified method for different contexts in our future research and evaluation work. Overall, the majority of focus group participants expressed satisfaction with the opportunity to communicate their opinions, even when they differed from the rest of the group, to hear new perspectives, and to prioritize barriers and interventions. Meanwhile, the project organizers reflected upon logistics, facilitation, interpretation, intended outcomes, and other aspects of the focus groups and surveys. They also expressed overall satisfaction with the process, emphasizing the benefits of the multilingual focus groups, the professionalism of focus group facilitators and their ability to establish clear and explicit ground rules of focus group engagement, and the ability to create a unique space for stakeholders to engage with each other in dialogue.

Overall, by bringing together stakeholders from different roles, geographic areas, and relationships with the topic into the same virtual space, and by creating space for collaboration between English and Spanish-speaking participants through simultaneous translation, project organizers created a unique platform for participants to share individual points of view and challenge their perspectives.

Discussion

Modification of the traditional Delphi method to include iterative focus groups combined with iterative surveys has the potential to yield more nuanced and robust qualitative results than the traditional Delphi method alone. The proposed method merits further exploration among researchers and practitioners due to its ability to provide dialogical qualitative results while retaining the anonymity and objectivity of quantitative surveys, leading to more comprehensive results and a framework for participatory decision-making among diverse stakeholders.

Future implementers of the modified Delphi method should consider potential challenges in designing and implementing the proposed method including the complexity of planning logistics, power dynamics, and use of technology.

A possible challenge of the proposed method is effectively designing and delivering focus groups and surveys concurrently, which can be onerous for researchers and evaluators with limited time, resources, or personnel capacity. Appropriate mixed-methods skill set, ample time, and meticulous organization are required to deliver the proposed method most effectively.

Finally, researchers and evaluators should consider whether virtual or in-person delivery of the method is most appropriate for their study. Limited access to technology can inhibit virtual delivery of this method and it is important to consider whether a virtual method is appropriate for the study population including level of access to technology, reliable internet, and comfort with technology (Hall et al., 2021; Lai et al., 2020). While the researchers on this project chose the virtual method as the only available option due to the COVID-19 pandemic, this format was well-received by the participants of the modified Delphi method.

Recommendations, Implications, and Application

Several recommendations can help Extension practitioners replicate and adapt the method:

1. Ensure the research team has sufficient capacity to plan, deliver, and analyze mixed methods administered concurrently.
2. Allocate ample time for discussion in either break-out sessions or as a large group for deeper conversations among focus group participants.
3. Reflect on and mitigate potential power imbalances when using heterogeneous expert panels.
4. Explore use of collaborative technology tools such as real-time surveys, Jamboards, Mentimeter and other tools for collecting evaluation data.
5. Consider modifying the method for in-person Delphi focus groups and surveys to facilitate opportunity for greater rapport and deeper discussion between participants.

Benefits of the modified Delphi method are apparent: it promotes inclusivity and a sense of community amongst multi-stakeholder participants in participatory decision-making (in our example, collaboratively identifying main barriers to shopping at farmers markets and interventions to overcome those barriers). The personalized engagement can lead to increased inclusivity and improved sense of community. It also allows diverse stakeholders to explore and inform each other's opinions and perspectives. Furthermore, this method can be implemented virtually or in-person, based on the needs. In-person facilitation of the method can benefit Extension professionals using participatory decision-making framework, and working with the communities within the same geographic proximity and/or having limited access to the internet and technology. The method can be utilized by Extension professionals working in agriculture,

food systems, natural resources, community economic development, and other areas to foster dialogue and create inclusive spaces for communities in the United States and globally.

Table 2. Top priorities selected by 2/3rds consensus in round three of Delphi
Awareness Barriers to shopping at farmers markets (n=12)

Barriers	**% Agree/ Strongly Agree**
Lack of awareness about which forms of payment besides cash are accepted at markets	90
Lack of awareness about market season	90
Lack of awareness about CalFresh/Market Match at market	89
Lack of awareness about pandemic EBT (Electronic Benefit Transfer) at markets	89
Lack of awareness about market locations	80
Lack of awareness about market dates	80
Lack of awareness about market staff available to assist with questions	80
Lack of awareness about market times	70

Table 3. Top priorities selected by 2/3rds consensus in round three of Delphi
Marketing Interventions (n=12)

Interventions	**% Somewhat Important/Important**
What are the most needed marketing changes to increase access of low-income communities and persons of color to the Sonoma County farmers markets? Make sure new CalFresh users know about CalFresh at farmers markets and Market Match	100
How important is it to use the following advertising channels to increase awareness about the farmers markets? Radio	100
How important is it to use the following advertising channels to increase awareness about the Farmers Markets? Signage, road signs, street banners	100

Interventions	% Somewhat Important/Important
How important is it to advertise markets in the following ways? Inform community residents about CalFresh eligibility	100
How important is it to advertise markets in the following ways? Coupons/vouchers	100
Other Marketing Interventions: Make info booth easier to find	100
What are the most needed marketing changes to increase access of low-income communities and persons of color to the Sonoma County farmers markets? Advertise locations and schedules of farmers markets	90
What are the most needed marketing changes to increase access of low-income communities and persons of color to the Sonoma County farmers markets? Have market managers explain to customers how to use Ca Fresh and Market Match	90
How important is it to use the following advertising channels to increase awareness about the Farmers Markets? CalFresh/WIC Offices	90
How important is it to advertise farmers markets to CalFresh Users (both in English and Spanish)? CalFresh Users	90
How important is it to advertise markets in the following ways? Partner with organizations who serve CalFresh users	90
How important is it to advertise markets in the following ways? Presentations to community groups	90
How important is it to advertise markets in the following ways? Geographically targeted marketing where low-income people live, work, and play	90
How important is it to advertise markets in the following ways? Peer-to-peer marketing (when customers promote markets to other potential customers)	90
How important is it to advertise markets in the following ways? Flyering at service providers for low-income residents	80
How important is it to advertise markets in the following ways? Increase visibility of market locations	80
Other Marketing Interventions: Always have vendors in the same the spot	80
Other Marketing Interventions: Make produce front and center at the market (rather than peripheral)	80
How important is it to advertise markets in the following ways? Social media	78
How important is it to use the following advertising channels to increase awareness about the farmers markets? Snail mail (postcards, flyers, letters)	70

Interventions	% Somewhat Important/Important
How important is it to use the following advertising channels to increase awareness about the farmers markets? Electronic email lists, newsletters, online calendars	70
How important is it to advertise markets in the following ways? Farm to School (put farmers market produce in school lunches with the sticker advertising markets)	70

Table 4.

Poll Evaluation for Participants (n=10)

	% Strongly Disagree	% Disagree	% Neutral	% Agree	% Strongly Agree
1. Were you able to provide the feedback you wanted on the barriers and intervention shared by the project facilitator?	0	10	10	50	30
2. At this point in time, do you feel that the barriers were successfully prioritized?	0	10	0	60	30
3. At this point in time, do you feel that the interventions were successfully prioritized?	0	1	0	60	30
4. Do you feel that differences of opinion in the small group were discussed and compromises were reached?	10	0	10	50	30

Table 5.

Focus Group Evaluation Questions for Participants

Open-ended Discussion Questions Following Focus Groups
1. Do you have any other feedback?
2. What did you think about hearing other perspectives during the breakout groups? Was it helpful?
3. What did you think about simultaneous interpretation?

4. Would you have preferred the focus group to be held only in your primary language?
5. Were there any voices or perspectives left out of the conversation that you wish were represented?

Table 6.

Project Evaluation Questions for Study Team: Open-ended Reflection

Thinking about the logistics, technology, facilitation, interpretation, and surveying, please add your thoughts below
1. What worked well?
2. What did not work well or could be improved upon?
3. What are key lessons learned or take-aways?
4. What findings stood out to you?

References

Barrett, D., & Heale, R. (2020). What are Delphi studies? *Evidence-Based Nursing*, *23*(3), 68-69. http://dx.doi.org/10.1136/ebnurs-2020-103303

Canessa, C., Vavvos, A., Triliva, S., Kafkalas, I., Vrachioli, M., & Sauer, J. (2022). Implementing a combined Delphi and Focus Group qualitative methodology in Nexus research designs—The case of the WEFE Nexus in Apokoronas, Crete. *Plos one*, *17*(7), e0271443.

Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. *Management science*, *9*(3), 458-467.

Delp, P., Thesen, A., Motiwalla, J., & Seshadri, N. (1977). Delphi: System tools for project planning. *Columbus, OH: National Center for Research in Vocational Education, Ohio State University*, 45-56.

Diaz, J., Gusto, C., Narine, L. K., Jayaratne, K., & Silvert, C. (2023). Toward Diversity, Equity, and Inclusion Outreach and Engagement in Extension Education: Expert Consensus on Barriers and Strategies. *The Journal of Extension, 61*(1), Article 21. https://doi.org/10.34068/joe.61.01.21

Diaz, J. M., Warner, L. A., & Webb, S. T. (2018). Outcome Framework for School Garden Program Development and Evaluation: A Delphi Approach. *Journal of Agricultural Education*, *59*(2), 143-165.

Israel, G. D., & Galindo-Gonzalez, S. (2008). Using Focus Group Interviews for Planning or Evaluating Extension Programs: AEC 387/PD036, rev. 5/2008. *EDIS*, *2008*(5).

Hall, J., Gaved, M., & Sargent, J. (2021). Participatory Research Approaches in Times of Covid-19: A Narrative Literature Review. *International Journal of Qualitative Methods*, 20. https://doi.org/10.1177/16094069211010087

Hsu, C.C. & Sandford, B. A. (2007). The Delphi Technique: Making Sense of Consensus. *Practical Assessment, Research, and Evaluation*, *12*(10). https://doi.org/10.7275/pdz9-th90

Lai, J., & Widmar, N. O. (2021). Revisiting the Digital Divide in the COVID-19 Era. *Applied economic perspectives and policy*, *43*(1), 458–464. https://doi.org/10.1002/aepp.13104

Lorenzo, A. B., Blanche, C. A., & Henson, J. F. (2003). Concordance among extension workers, researchers, and professional arborists in rating landscape trees. *The Journal of Extension*, *41*(5), 9.

Ludwig, B. (1997). Predicting the future: Have you considered using the Delphi methodology?. *Journal of extension*.

Niederberger, M. & Spranger, J. (2020). Delphi technique in health sciences: a map. *Frontiers in Public Health, 8*:457. https://www.doi.org/10.3389/fpubh.2020.00457

Polush, E. Y., Grudens-Schuck, N., Exner, D. N., & Karp, R. (2016). Delphi Survey of Needs for On-Farm Research: Forecasting Changes in a Farm Organization. *The Journal of Extension, 54*(3), Article 20. https://doi.org/10.34068/joe.54.03.20

Smithson, J. (2000). Using and analysing focus groups: limitations and possibilities. *International journal of social research methodology*, *3*(2), 103-119.

Turoff, M., & Linstone, H. A. (2002). The Delphi method-techniques and applications. *Journal of Marketing Research*, 18(3), https://doi.org/10.2307/3150755

Warner, L. A., Vavrina, C. S., Campbell, M. L., Elliott, M. L., Northrop, R. J., & Place, N. T. (2017). A strategic plan for introducing, implementing, managing, and monitoring an urban Extension platform. *The Journal of Extension*, *55*(3), 22.

Warner, L. A. (2014). Using the Delphi Technique to Achieve Consensus: A Tool for Guiding Extension Programs: AEC521/WC183, 10/2014. EDIS, 2014(8).