



## Tips for Improving Food Safety Education through Cooperative Extension Resources and Outreach Events

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### Background

Food producers of all sizes must produce and process food products of suitable quality for safe consumption to ensure consumer health. Effective education of these producers relies heavily on Extension efforts that emphasize tackling community and societal issues at the grassroots level. Many new, small, and minority-owned businesses face critical capacity challenges with workforce, food safety training, and regulatory compliance understanding (Magiya 2023, Richard et al. 2023, Yapp and Fairman 2006), which directly impacts their ability to produce safe food products and can interfere with their capability to grow and enhance long-term economic viability of their businesses.

Educators across the Virginia Cooperative Extension (VCE) system work closely with food producers to improve learning outcomes (such as improved food safety practices like handwashing; Barone et al. 2020, Snyder et al. 2018). However, educators engaged in this work must first identify their stakeholder needs to provide these producers with effective education, which may include providing materials in variable formats or languages. Overcoming these barriers requires substantial effort in producing or translating training materials in multiple formats. Therefore, it is crucial to identify the most significant obstacles to acquiring food safety knowledge and changing behaviors before embarking on developing further educational programs.

A statewide survey was conducted from June 2023 through April 2024 to identify what was going well in Extension education and outreach (practices to emphasize), what was getting in the way of successful education (barriers to remove), and strategies for growing VCE capabilities to effectively reach learning outcomes (meeting additional resource needs). Overall findings from this study are interpreted below.

### Practices to emphasize

The survey indirectly identified many things that VCE is doing well. Extension educators are encouraged to continue to focus on generating and sharing factsheets and teaching through interactive, prerecorded video, and hybrid formats (Figure 1). Broadly, educators should prioritize these forms of instruction over others (such as one-on-one instruction or posters), unless specific demographic groups of interest expressly prefer it (as was the case with “other” races/ethnicities).

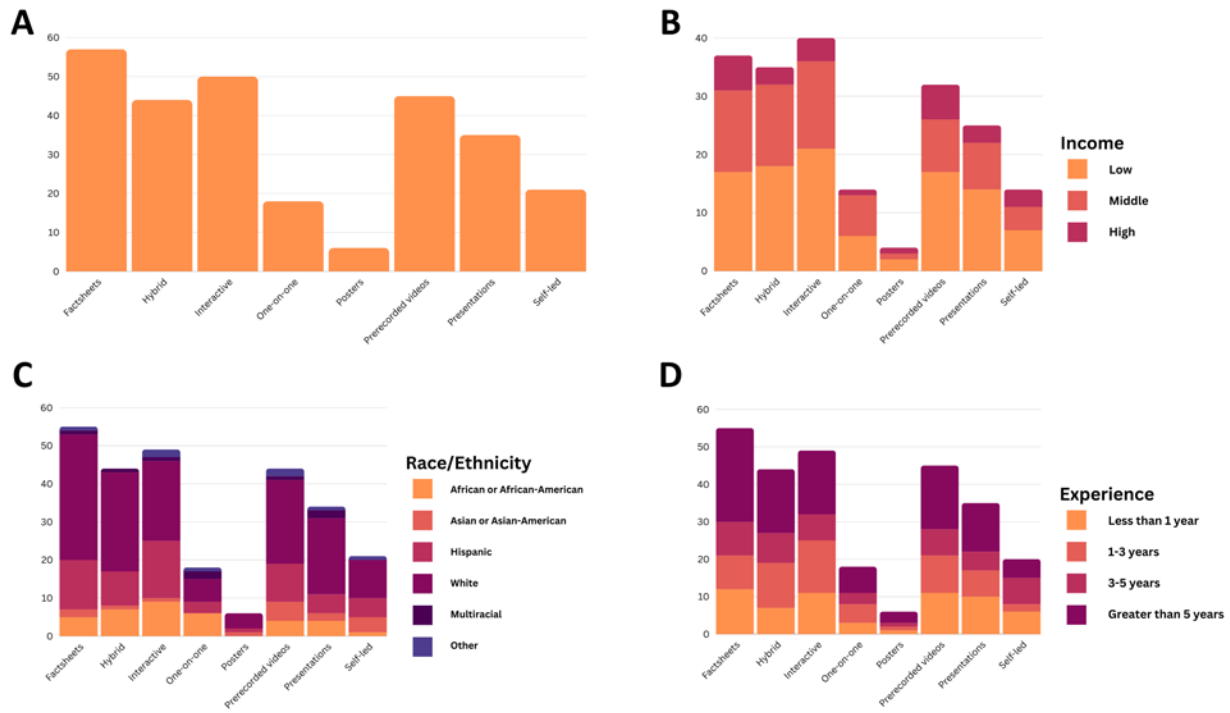


Figure 1. Preferred formats for food safety education overall (A) and by income bracket (B), race/ethnicity (C), and years of experience operating a food business (D).

Food producers showed a strong preference for email as the primary form of outreach about training events (Figure 2). This was especially true for new food businesses (businesses in operation less than one year), which should be considered when planning educational events for beginning food businesses. Middle-income producers were more likely than low-income producers to prefer email communication, so educators should take this into consideration when planning training events to specifically reach low-income food producers.

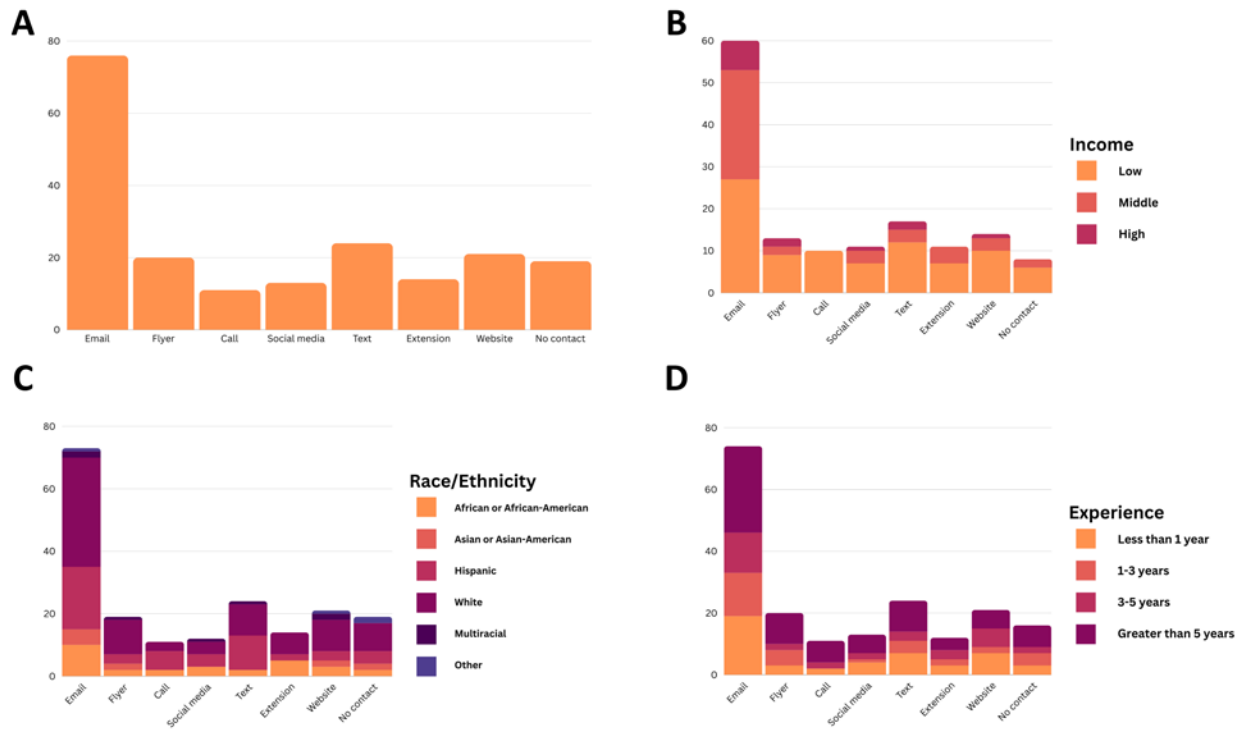


Figure 2. Preferred outreach methods for food safety education overall (A) and by income bracket (B), race/ethnicity (C), and years of experience operating a food business (D).

Educators are encouraged to develop (or, if already established, continue to manage) email lists for contacting target audiences. Policies preventing the use or development of these communication streams should be revisited to ensure stakeholder needs are effectively met.

## Barriers to remove

Barriers to food safety knowledge gain and behavior change remain complex and contextual. This was seen in this study by the high number of respondents who did not select barriers from the provided list, but instead selected the open-ended “other” text box (Figure 3).

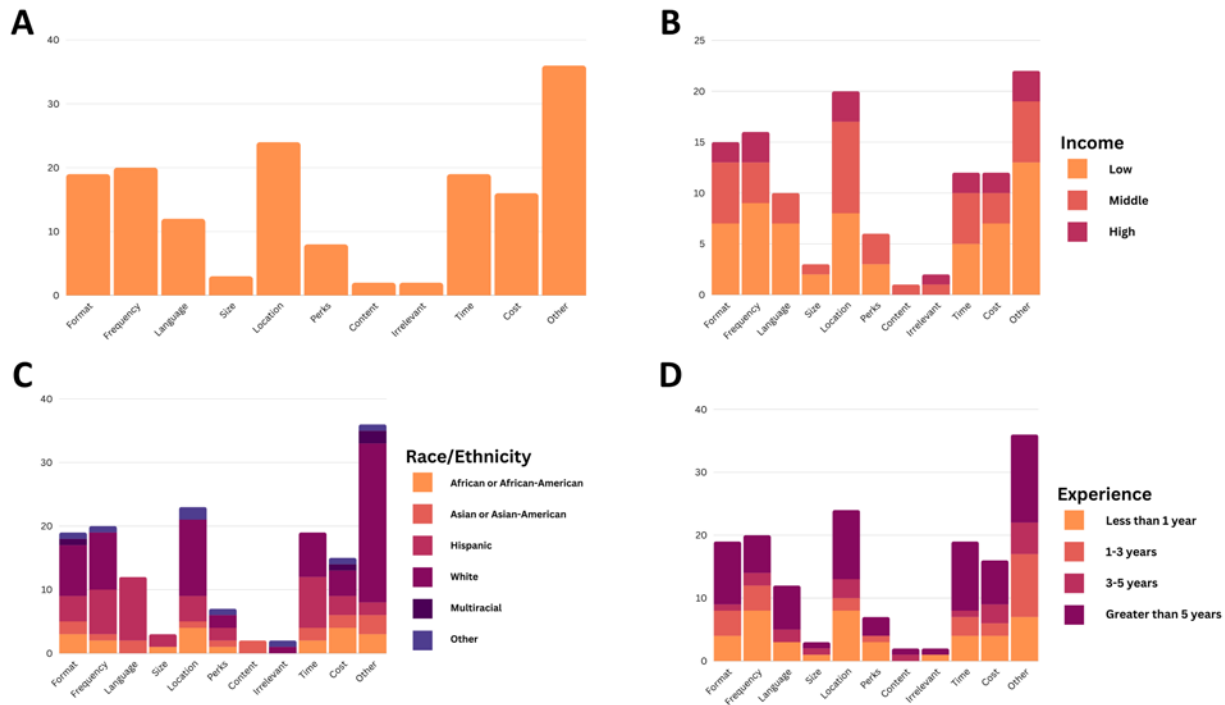


Figure 3. Factors that impacted the ability of participants to attend and learn at food safety training events overall (A) and by income bracket (B), race/ethnicity (C), and years of experience operating a food business (D).

New food businesses were more likely than businesses in operation 1-3 years to identify location as a barrier to learning. To streamline efforts to reach diverse producers, educators are encouraged to prioritize geographic/location equity when planning and conducting training events.

However, even though the high cost of trainings was not identified as the greatest barrier in need of removal, removing location barriers to education will undoubtedly require subsidizing of other costs (such as reservation fees) to ensure cost does not become a greater barrier to effective education. Educators are encouraged to factor these costs into cost reduction efforts (such as through sponsorships or grant fundings) and use these data as one way to highlight the need for funds to effectively train food producers.

Producers also identified inadequate facilities (for example, not having a three-compartment sink) as the primary reason they are unable to implement more food-safe behaviors in their businesses, followed closely by being unaware of whom to contact with questions. Educators are encouraged to develop resources to help food producers identify for themselves who to contact with questions, such as through decision/phone trees or region-specific maps with contact emails.

Some producers also identified a lack of tools as a barrier to behavior change in their operations. One way educators could remove this type of barrier could be by providing some of these tools (such as handheld pH meters and reagents (calibration standards), test strips, or digital thermometers) as incentives at trainings or for VCE to more broadly consider the types of branded materials used throughout the year (such as cleaning brushes).

## Meeting additional resource needs

Respondents identified other barriers to effective education at the individual and community levels, including those related to facility infrastructure, internet access, technology access (such as computers), being unaware of training events, and needing more unique timing of activities (such as in December and January for some

business' self-identified "off-season"). This will require educators to lean more heavily into relationship management efforts, something VCE is already successful with.

Removing community-level barriers will be considerably more challenging. It is in these instances that shared facilities and equipment can help provide additional, necessary resources until widespread individual barriers can be removed. Examples of these types of structures include shared-use processing spaces, such as those provided by the VCE Carver Food Enterprise Center or Small Ruminants Mobile Processing Unit.

The authors are willing and able to share the findings from the anonymous data collected in this survey. These data were utilized in part to successfully obtain a USDA National Institute of Food and Agriculture Food Safety Outreach Program project in 2024 (2024-70020-42955) to effectively train food producers in the Black Belt (an area stretching from Mississippi up through Virginia). The authors hope that others will be able to use these data to support their programs and outreach efforts as well. If anyone wishes to use these data to apply for additional funding or support, please email [ahamilton@vt.edu](mailto:ahamilton@vt.edu).

Please help us evaluate the use of these findings by scanning or clicking on the QR code below and taking the short survey.



Figure 4. Link to short evaluation of use of survey findings:  
[https://vce.az1.qualtrics.com/jfe/form/SV\\_7ZFz0VICTiuX3Zc](https://vce.az1.qualtrics.com/jfe/form/SV_7ZFz0VICTiuX3Zc).

## Summary

Widespread bias in VCE outreach and instructional methods was not directly observed in this study. Educators are encouraged to continue developing factsheets and engaging in interactive and hybrid instructional formats. When targeting specific groups (such as low-income, races/ethnicities, or experience running a food business), it is also recommended that educators adjust education events according to specific group preferences as described in Parraga-Estrada *et al.* (under review). Educators should prioritize efforts to improve location equity across the Commonwealth and grow shared-use resources to meet diverse food producer needs (such as through capacity building grants).

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This publication summarizes research under review for publication in the peer-reviewed *Journal of Food Protection*. If you would like further details related to how this work was conducted, methods used for data analysis, or specific findings by respondent income bracket, race/ethnicity, or years of experience operating a business, the final publication will provide this information.

## References

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