FarmResponse® Pilot Data Evaluation Report: September 2022

EXECUTIVE SUMMARY

- The overall score was statistically significantly higher at posttest compared to pretest (p<0.0001) with a mean increase of 4.01 (standard deviation = 3.07).
- Females scored lower than males and nonwhites scored lower than whites.
- Results remained statistically significant after adjusting for being female and nonwhite.
- Statistically significant changes were seen from pretest to posttest on 17 of 20 test questions.
- Therapists comprised 57% of the participants who completed the pretest and posttest.
- Almost one-third of participants reported working in a mental healthcare clinic.

Evaluation: RE-AIM Model

REACH: Participant Characteristics Summary

The 89 FarmResponse participants were primarily female (n=69, 76.4%) (Table 1). The majority were white (n= 63, 70.8%) with African-American being the second most commonly reported race (n=12, 13.5%). Twenty-five participants were Hispanic/Latino/a. Six participants were agricultural operators. The majority of participants were therapists (57%). Workplaces included mental health clinics, higher education, hospitals, community health clinics, primary care clinics, and rural healthcare clinics. Forty percent worked in healthcare for at least 10 years.

Ten participants did not respond to the number of years working in healthcare question and reasons for nonresponse should be explored further. Possibly, these individuals did not consider themselves healthcare workers and an option for "Not a healthcare worker" should be added to the response choices.

The high response from therapists indicates the desired audience is being reached, but the question does not easily inform the evaluation as to whether these therapists work in rural areas. A separate question related to working with rural patients and clients should be included in the survey. Many of the 19 who responded "other profession" category would fit in the listed categories and this may need to be manually coded. Psychologists and related fields could be combined with the therapist category. Alternatively, therapist/psychologist could be used in the response categories. The students could be included in their respective fields or a separate category for student added to the response options.
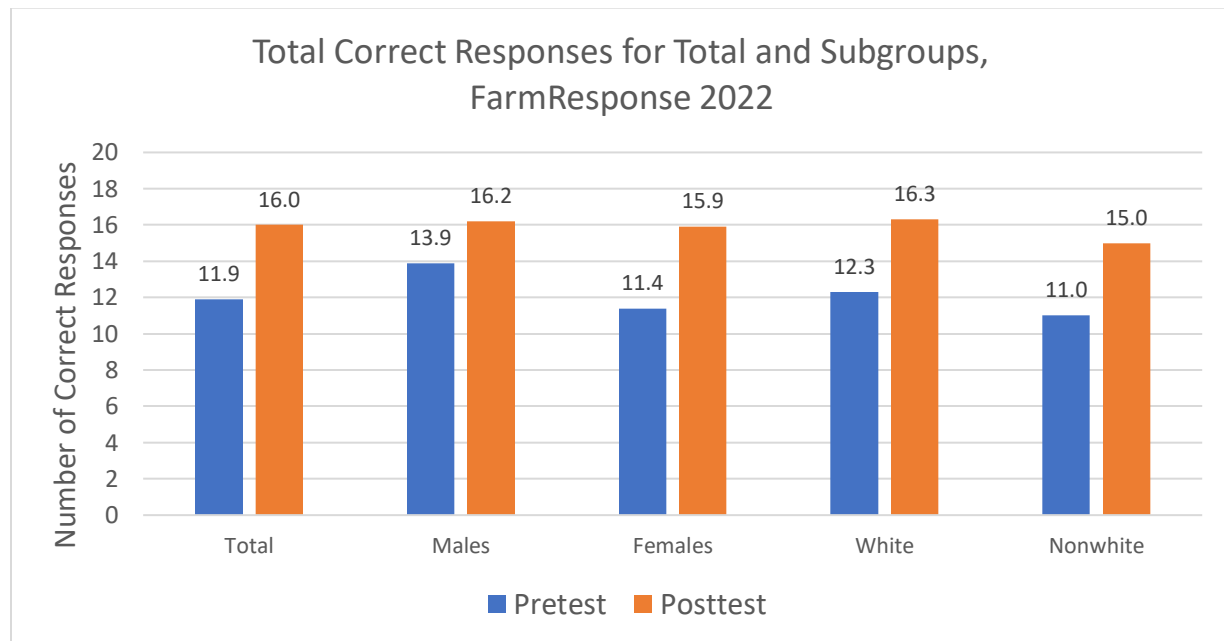
In summary, mental healthcare workers, an important audience for the FarmResponse training, was the majority of the participants, however, it could not be determined whether they were working in a rural community.

EFFECTIVENESS: Results of Pretest to Posttest changes in knowledge

At pretest, the average of the FarmResponse score was 11.9 (standard deviation = 3.12) and increased at posttest to 16.0 (standard deviation = 2.22). Not only did the score improve, but the variability in the score decreased, indicating that participants learned the material presented in FarmResponse with greater certainty around the mean. The difference of 4.01 (standard deviation = 3.07) was significant at the 95% confidence level (t=12.3, p<0.0001).

Gender differences were observed in the total test scores. At pretest and posttest, males scored higher than females, however, females closed the gap at pretest. Females showed a greater improvement than males, but they started lower. Differences were also seen in those of white and nonwhite race. Whites scored higher at pretest and posttest compared to nonwhites; the gap in scores remained the same from pretest to posttest.
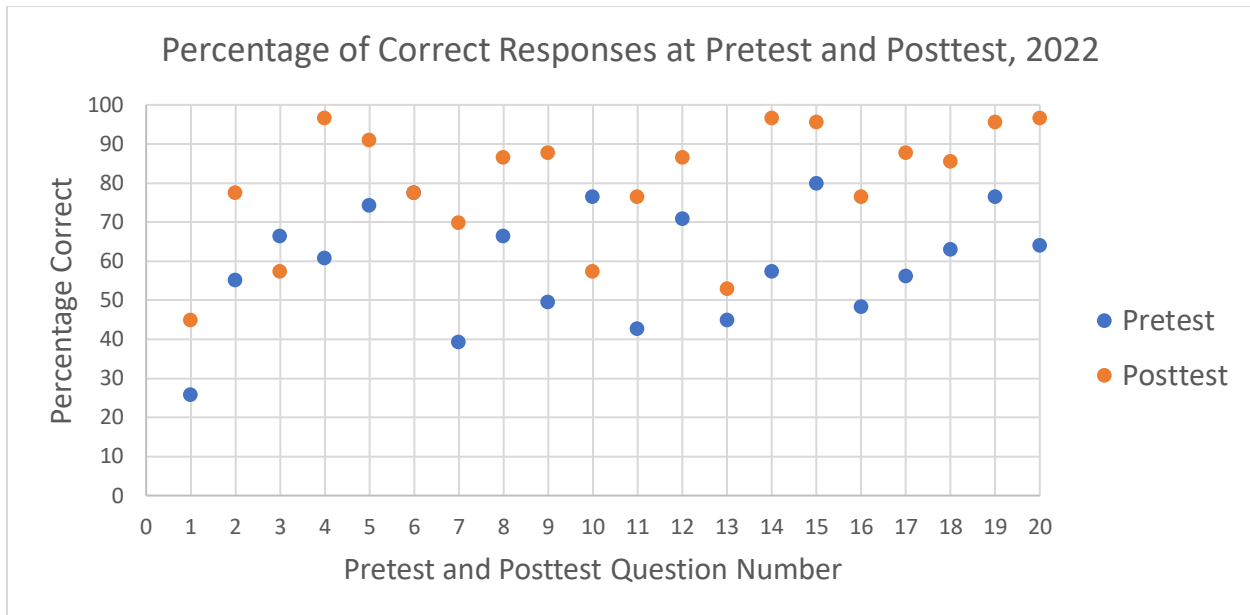
Figure 1. Mean number of correct responses for the total, and stratified by gender and race, FarmResponse, 2022.

Adjusting for gender (female vs. male) and race (nonwhite vs. white) in 172 participants with complete data found that the expected change in test score increased by 1.34 (95% confidence interval (CI) = 1.27, 1.41) from pretest to posttest, the score increased by 1.10 (CI= 1.03, 1.17) for females compared to males, and increased by 1.04 for nonwhite compared to white participants (CI 1.02, 1.20). Even after adjusting for differences by gender and race, a significant increase in the posttest was observed (X^2 = 53.8, p<0.0001).

Significant changes were seen in 17 of the 20 individual items (Figure 2). Questions 3 and 10 had higher scores at pretest than at posttest and question 6 was the same at pretest and posttest. Some items showed large gains in knowledge from pretest to posttest. The greater variability in the pretest responses can be seen and form a wider band across the graph, but the posttest scores show a narrower spread.

Figure 2. Percentage changes of correct test responses from pretest to posttest in 89 participants.

ADOPTION/Implementation: Results from evaluation survey

76% of respondents said that it would be easy or very easy to implement changes in their communication and referrals in their practice.

MAINTENANCE: Results from evaluation survey

86% of respondents said that they would recommend this training to their healthcare colleagues.

Methods

Pretests were matched to their respective posttests with a unique identifier and only those who completed both were included in the analyses. The time period covered included the first six months of 2022. Frequencies and percentages were calculated to describe the participants. Individual test items were coded as correct = 1 or incorrect = 0. The number and percentage of correct responses was tabulated and a chi-square test used to assess for statistical significance at the 95% confidence level. The Cochran-Mantel-Haenszel test was used to test for change in knowledge from pretest to posttest on individual test items. The total sum score of correct responses was calculated by summing over the correct responses for all items and differences in score was assessed for gender and race.

Due to significant differences by gender and race, a repeated-measures generalized estimating equations analysis was conducted on the data using a Poisson distribution because the outcome is a count of correct responses. These analysis allowed control for confounding and assessment of the combined effects of gender and race in the association between pretest and posttest scores. Detailed results are shown in the following Tables 1 and 2.

Table 1. Characteristics of 89 FarmResponse participants who completed the pretest and posttest between February and June, 2022.

Participant Characteristic	Number (%)
Gender:	
Male	18 (20.2)
Female	69 (76.4)
Missing	3 (3.37)
Race:	
White	63 (70.8)
American Indian or Alaskan Native	1 (1.12)
Asian	3 (3.37)
Black	12 (13.5)
Native Hawaiian or Pacific Islander	0
Missing	5 (5.62)
Hispanic ethnicity:	
Not Hispanic	63 (70.8)
Hispanic	25 (28.1)
Missing	1 (1.12)
Years working in healthcare:	
< 2	9 (10.1)
2 – 5	20 (22.5)
6 – 10	14 (15.7)
> 10	36 (40.4)
Missing	10 (11.2)
Profession:	
Physician	0
Physician Assistant	0
Nurse Practitioner	1 (1.12)
Registered Nurse	1 (1.12)
Licensed Practical Nurse	0
Social Worker	16 (18.0)
Therapist	51 (57.3)
Emergency Medical Services	0
Other	19 (21.3)
Missing	1 (1.12)
Work Environment or Setting:	
Rural health care	1 (1.12)
Hospital	7 (7.87)
Primary care clinic	3 (3.37)
Mental healthcare clinic	28 (31.5)
Community healthcare clinic	4 (4.49)
Home healthcare	0
Pharmacy	0
EMS	0
Higher education	13 (14.6)
Hotline worker	0
Other workplace	33 (37.1)

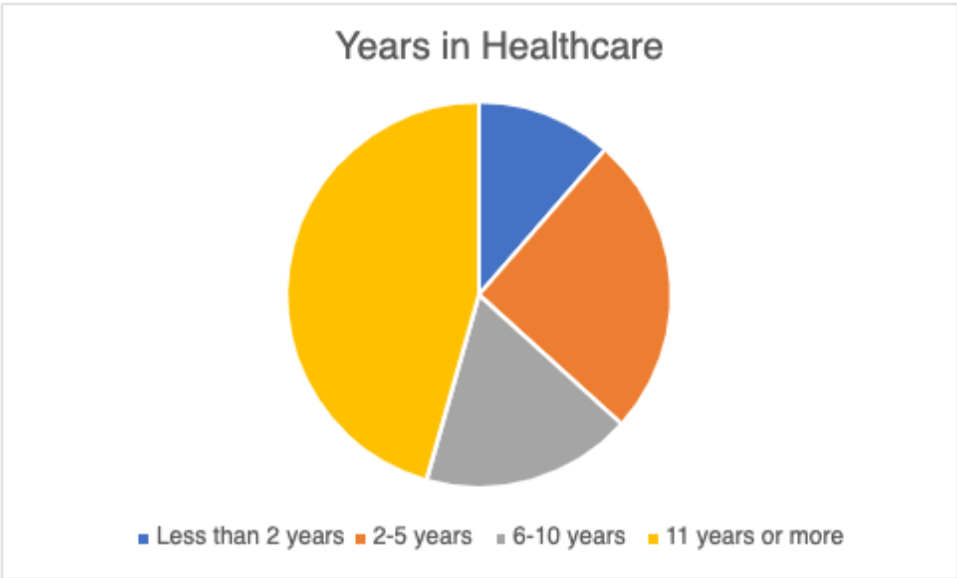Figure 3. Years in healthcare of 89 participants.

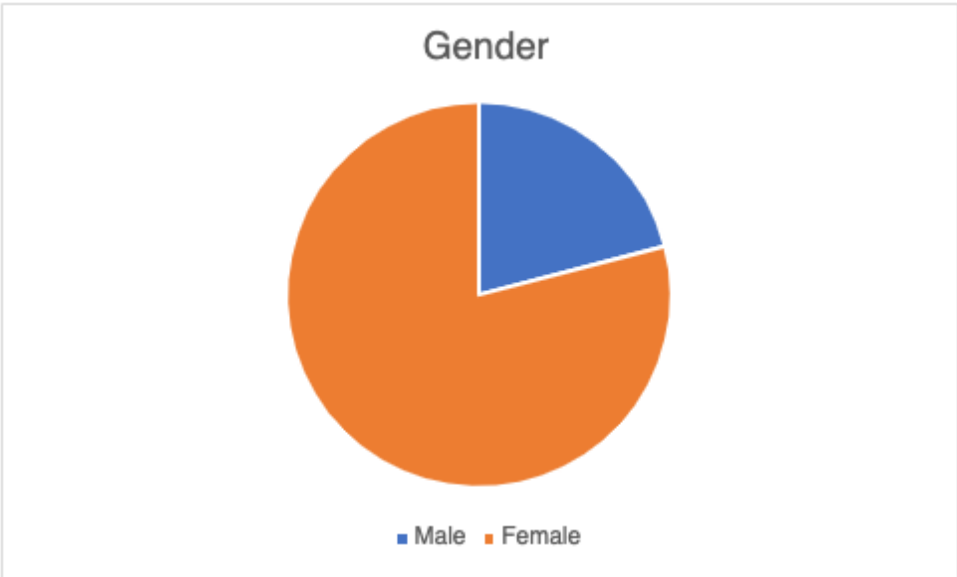
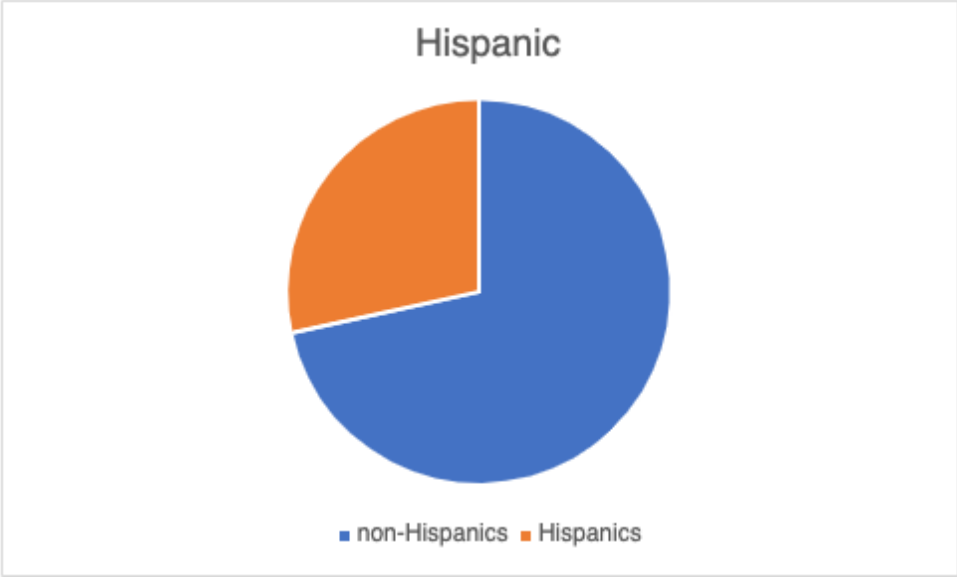Figure 4. Gender of 89 participants.

Figure 5. Ethnicity of 89 participants.

Figure 6. Race of 89 participants.

Figure 7. Profession of 89 participants.
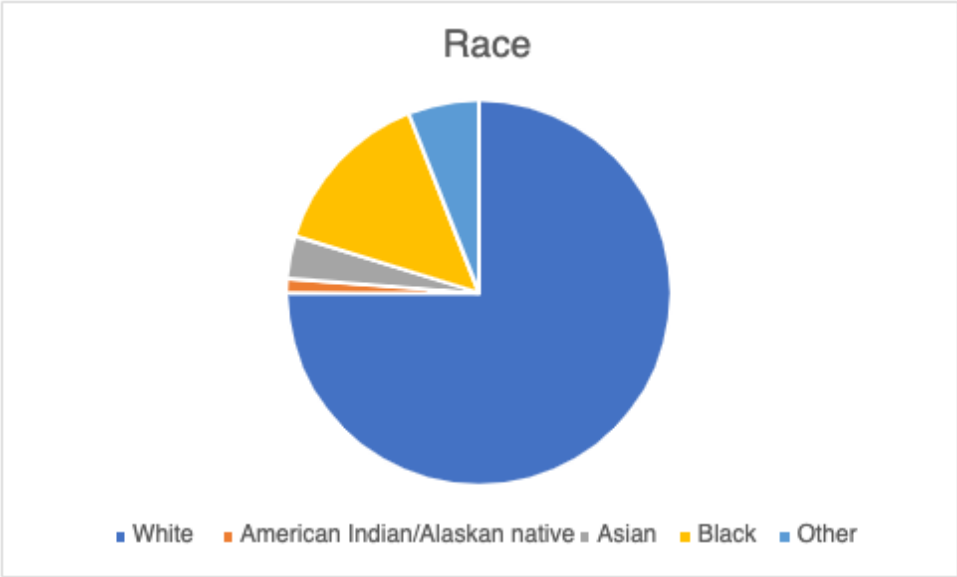

Profession

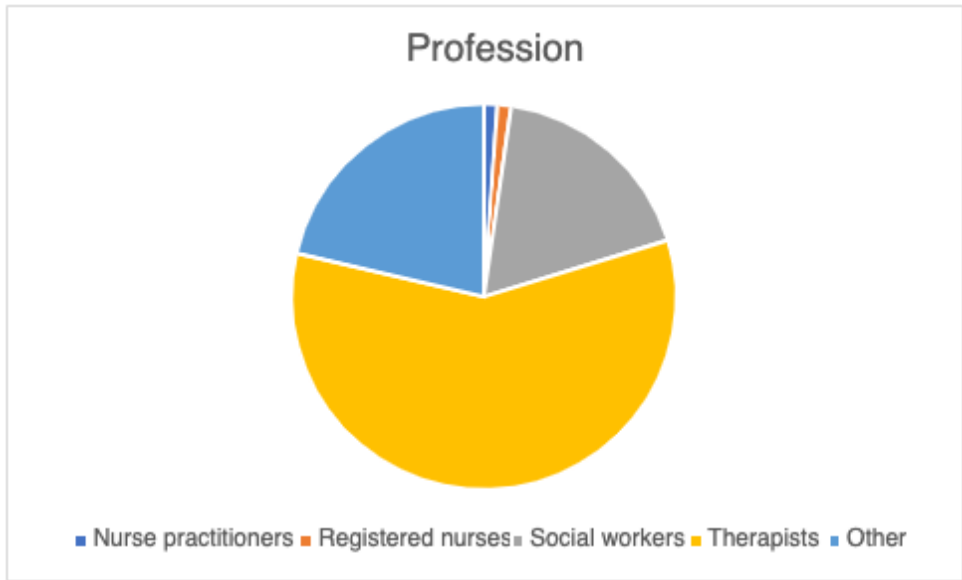Legend: Nurse practitioners ■ Registered nurses ■ Social workers ■ Therapists ■ Other

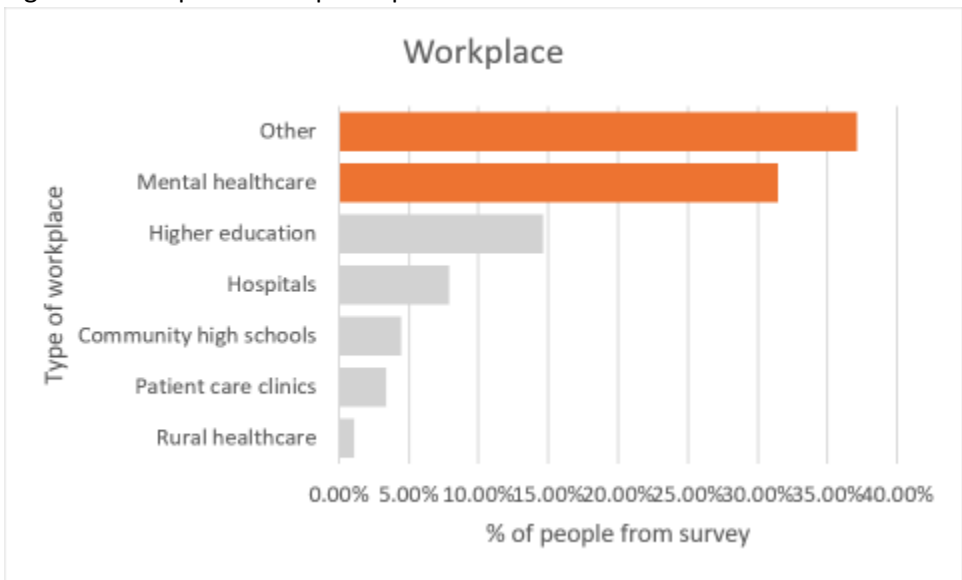Figure 8. Workplace of 89 participants.

Workplace

Table 2. Percentage of 89 participants responding **correctly** at pretest and posttest with statistical significance test for individual change on each Farm Response question.

No.	Test Question	Pretest n (%)	Posttest n (%)	X^2 (p-value)
1	There are ten health factors depicted in the Total Farmer Health model. Select the correct examples of the Total Farmer Health model health factor icons. (D)	23 (25.8)	40 (44.9)	9.32 (0.002)
2	What was a finding of the 2019 American Farm Bureau survey of rural residents? (B)	49 (55.1)	69 (77.5)	12.5 (0.0004)
3	Of the types of US farms, which has the largest representation in the number of overall US farms? (A)	59 (66.3)	51 (57.3)	2.29 (0.13)
4	Which statement about agricultural production business is true? (C)	54 (60.7)	86 (96.6)	30.1 (<0.0001)
5	True or False: Out of every $1.00 spent by the consumer on US agricultural products purchased at the retail market, the farmer receives on average 50 cents. (B)	66 (74.2)	81 (91.0)	9.0 (0.003)
6	What are characteristics of mediation for agricultural producers? (D)	69 (77.5)	69 (77.5)	0 (1.00)
7	Out of ten industry sectors designated by the US Bureau of Labor, where does the Agriculture, Forestry, Fishing, and Hunting rank in the rate of work-related fatalities (per 100,000 workers)? (A)	35 (39.3)	62 (69.7)	18.7 (<0.0001)
8	Which best describes the relationship of agricultural injuries and the mental health of the farmer? (C)	59 (66.3)	77 (86.5)	10.8 (0.001)
9	Which organization can help farmers obtain equipment they may need due to a disability or to prevent injuries? (A)	44 (49.4)	78 (87.6)	30.4 (<0.0001)
10	Which is a true statement about immigrant farmers and farmworkers? (B)	68 (76.4)	51 (57.3)	8.26 (0.004)
11	Which statement accurately describes Black farmers? (D)	38 (42.7)	68 (76.4)	20.5 (<0.0001)
12	Which statement best depicts the experiences and challenges of young farmers? (C)	63 (70.8)	77 (86.5)	10.9 (0.001)
13	Which of the following statements are true? (B)	40 (44.9)	47 (52.8)	1.32 (0.25)
14	What is one of the accessibility and accommodation barriers faced by farmers needing mental health care? (B)	51 (57.3)	86 (96.6)	33.1 (<0.0001)
15	Why does the opioid epidemic appear to be disproportionately affecting the farming community? (C)	71 (79.8)	85 (95.5)	10.9 (0.001)
16	Which of the following statements is true regarding suicide and agriculture? (B)	43 (48.3)	68 (76.4)	13.9 (0.0002)
17	The percentage of national suicides that involved a firearm was 60%. What percentage of farmer suicides involve a firearm? (C)	50 (56.2)	78 (87.6)	23.1 (<0.0001)
18	According to the Iowa Model of Multiple Modes of Interventions, what should you consider including in healthcare interventions for agricultural workers to increase education effectiveness? (C)	56 (62.9)	76 (85.4)	11.8 (0.0006)
19	Which of the following best describes mental healthcare in rural areas? (A)	68 (76.4)	85 (95.5)	13.8 (0.0002)
20	The Rural Health Information Hub outlined several issues that warrant addressing to improve access for rural communities. Which of these issues does FarmResponse training directly address? (D)	57 (64.0)	86 (96.6)	25.5 (<0.0001)

Appendix: Evaluation survey test questions

1. The overall level of content presented was:
   a. Too basic
   b. Appropriate
   c. Too advanced
2. How well did the activity help you achieve stated objective? Explain the Total Farmer Health model as it relates to factors for mental health in agriculture.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree
3. How well did the activity help you achieve stated objectives? Describe characteristics of US farm producers and their farms.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree
4. How well did the activity help you achieve stated objectives? Contras financial stressors in farm and ranch operators to non-agricultural employees.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree
5. How well did the activity help you achieve stated objectives? Summarize the impact of mediation as a tool to mitigate farm stress.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree
6. How well did the activity help you achieve stated objectives? List work challenges inherent in agricultural production as it relates to mental well-being.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

7. How well did the activity help you achieve stated objectives? Identify the impact of farming cultures on farmer mental health and health-seeking behaviors.
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree
8. How well did the activity help you achieve stated objectives? Identify barriers that agricultural workers face in accessing healthcare.
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree
9. How well did the activity help you achieve stated objectives? Describe risk factors for suicide in agricultural populations.
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree
10. How well did the activity help you achieve stated objectives? Identify three agricultural stress referral sources that can be used to address the needs of this population/
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree
11. How well did the activity help you achieve stated objectives? Improve clinical communication skills concerning mental health distress and stressors of agricultural workers and their families.
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree
12. Please respond to the following statements. This activity increased my professional knowledge.
    a. Strongly disagree
    b. Disagree
    c. Neither
    d. Agree
    e. Strongly agree

13. Please respond to the following statements. This activity changed my communication approach.
    a. Strongly disagree
    b. Disagree
    c. Neither
    d. Agree
    e. Strongly agree
14. Please respond to the following statements. This activity expanded my range of referrals for agricultural workers.
    a. Strongly disagree
    b. Disagree
    c. Neither
    d. Agree
    e. Strongly agree
15. Please respond to the following statement. I would recommend this training to my healthcare colleagues.
    a. Strongly disagree.
    b. Disagree
    c. Neither
    d. Agree
    e. Strongly agree
16. Would you recommend this training to your healthcare colleagues? (Please explain why or why not.)
17. How difficult would it be for you to implement changes in your communication and referrals in your practice?
    a. Very difficult
    b. Difficult
    c. Does not apply to me
    d. Easy
    e. Very easy
18. What do you see as the challenges or benefits of your intended change?
19. How conductive were the following aspects to the learning process? Virtual learning platform
    a. Fair
    b. Average
    c. Good
    d. Excellent
20. How conducive were the following aspects to the learning process? Audiovisuals
    a. Fair
    b. Average
    c. Good
    d. Excellent

21. How conducive were the following aspects to the learning process? Interactive Activities
   a. Fair
   b. Average
   c. Good
   d. Excellent
22. Was an announcement made regarding conflict of interest?
   a. No
   b. Yes
23. Was the program content presented in a non-biased manner?
   a. No
   b. Yes
24. Would you like to share anything else about this training?