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Research In Brief

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Abstract

The COVID-19 pandemic has increased the need for indirect Extension programming. To ensure a consumer-focused response, we gathered data from 452 survey respondents regarding how the pandemic was affecting their food-related and health behaviors. The majority reported obtaining their food from a grocery store as they had prior to the pandemic, albeit less frequently, and having increased their home food preparation. Due to the pandemic, respondents were less physically active and more stressed and were seeking reliable nutrition and wellness information. We describe how we were able to facilitate an immediate response by repackaging and adapting existing programming to meet pressing client needs, and we identify broader implications of our work.

Keywords: COVID-19, needs assessment, wellness, nutrition

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Introduction

The novel coronavirus, COVID-19, has presented health and well-being concerns for everyone and implications for Extension programming. Extension provides accessible, evidence-based information to local communities and responds during disasters and emergencies (National Institute of Food and Agriculture, n.d.). Therefore, Extension is well positioned to respond to the COVID-19 pandemic, adjusting and adapting to provide reliable and relevant information under rapidly changing circumstances (Fawcett et al., 2020).

Social distancing directives and stay-at-home orders were enforced early in the pandemic in an attempt to slow viral transmission (Canipe, 2020; Centers for Disease Control and Prevention, 2020). Social distancing

directives reduced the number of people able to gather, leading to closures across the country of nonessential businesses, including restaurants and fitness centers (McPhillips, 2020). Initial responses to the pandemic resulted in widespread panic buying and bulk purchasing of essential items and staple foods (Arafat et al., 2020; Sim et al., 2020). As a result, there was limited supply of and access to certain food products (Arafat et al., 2020; Sim et al., 2020). This was further compromised by COVID-19 outbreaks in food processing facilities, which acutely limited consumer food supply and access (Macias, 2020). Grocery stores offering online shopping and pickup were overwhelmed, resulting in long wait times requiring that customers plan and order their groceries in advance (Byrne, 2020; Moyer & Ruane, 2020; Salasky, 2020). Misinformation about COVID-19 transmission also led to public confusion about food safety, such as lack of clarity about whether the disinfecting of food packages was necessary (Gharpure et al., 2020).

The impacts of COVID-19 on food procurement, preparation, and safety as well as on physical activity and stress levels are not clearly understood. Evaluation of the impacts of the COVID-19 pandemic on food behavior, physical activity, and stress levels in communities can provides information Extension professionals can use to better serve clients with timely information and relevant resources. The purpose of the study reported here was to explore the impacts of the COVID-19 pandemic on nutrition and wellness behaviors of Iowans. Further, we describe our responses to these identified impacts, information that may have renewed importance as we experience the expected spike in infections during the winter months (Stone, 2020) that is now upon us.

Methods

We conducted a comprehensive statewide online nutrition and wellness needs assessment of Iowans via the online survey system Qualtrics (70 questions). We had developed a survey comprising 60 questions addressing general health, food practices, food safety practices, programming needs, and sociodemographics. Prior to launching that assessment, however, the COVID-19 pandemic began. In response, we added 10 questions about the impact of the pandemic on food procurement, food preparation, physical activity, and stress. These questions were based on topics discussed on various media channels and by members of professional food and nutrition organizations and were reviewed for content validity by our research team members. Herein we discuss only responses to questions related to the pandemic and sociodemographics (see appendix).

Questionnaire dissemination and data collection were managed by Qualtrics. Sampling continued until the desired goal of 450 respondents (n = 452) was achieved. To increase respondent diversity, oversampling of persons of color, those aged 25–35 years and 55 years and older, and those with lower incomes was conducted. We analyzed frequency data with Statistical Package for Social Sciences (Version 26.0, IBM) using descriptive statistics. The study was reviewed and declared exempt by the Iowa State University Institutional Review Board (ID 20-122).

Results

Respondents

Table 1 contains demographic information for survey respondents. Respondents were primarily young (≤35 years), non-Hispanic, White, female, and married. The majority had obtained a high school diploma or a

higher level of education. Income and food security classifications (Hager et al., 2010) were evenly distributed. The most frequently reported chronic health diagnoses were depression, arthritis, and hypertension. The majority had not used Extension nutrition and wellness programming or were unaware of having done so. Most used social media.

Table 1.

Respondent Demographics

Characteristic	No.	% [a]
Age		
18 to 24 years	92	20.4
25 to 34 years	123	27.2
35 to 44 years	53	11.7
45 to 54 years	45	9.9
55 to 64 years	83	18.4
65 years and over	56	12.4
Ethnicity		
Hispanic or Latino	46	10.2
Not Hispanic or Latino	405	89.6
Missing	1	0.2
Race		
American Indian or Alaska Native	17	3.8
Asian	21	4.6
Black	40	8.8
Hispanic/Latino	8	1.8
Mixed Race	5	1.1
Native Hawaiian or Pacific Islander	2	0.4
White	358	79.2
Other	1	0.2
Gender		
Female	317	70.1
Gender variant/nonconforming	2	0.4
Male	125	27.7
Transgender female	2	0.4

Transgender male	2	0.4
Not listed/prefer not to answer	4	0.9
Income		
Less than $12,999	47	10.4
$13,000 to $24,999	52	11.5
$25,000 to $39,999	57	12.6
$40,000 to $54,999	52	11.5
$55,000 to $69,999	46	10.2
$70,000 to $84,999	58	12.8
$85,000 to $99,999	30	6.6
$100,000 to $149,000	32	7.1
More than $150,000	22	4.9
Missing	56	12.4
Highest level of education received		
Less than high school	22	4.9
High school degree/GED	98	21.7
Some college	94	20.8
Associate's degree	64	14.2
Technical school	12	2.7
Bachelor's degree	117	25.9
Graduate school/degree	42	9.3
Missing	3	0.7
Marital status		
Divorced	68	15.0
Married	197	43.6
Separated	9	2.0
Single, never married	154	34.1
Widowed	21	4.6
Missing	3	0.7
Food security		
Food insecure	219	48.5
Food secure	228	50.4

Missing	5	1.1
Chronic health conditions [b]		
Angina	26	5.8
Arthritis	106	23.5
Cancer	40	8.8
Depression	146	32.3
Diabetes	48	10.6
Food allergies	50	11.1
Heart attack	27	6.0
High cholesterol	88	19.5
Hypertension	96	21.2
Kidney disease	23	5.1
Lung disease	60	13.3
Oral health conditions	70	15.5
Osteoporosis	37	8.2
Stroke	18	4.0
Other	53	11.7
Previous Extension nutrition and wellness program use [c]		
No, I have not used Extension programs or resources	347	76.8
Yes, I have used Extension programs and resources	105	23.2
Social media use		
No	52	11.5
Yes	390	86.3
I'm not sure	10	2.2

Note. n = 452.

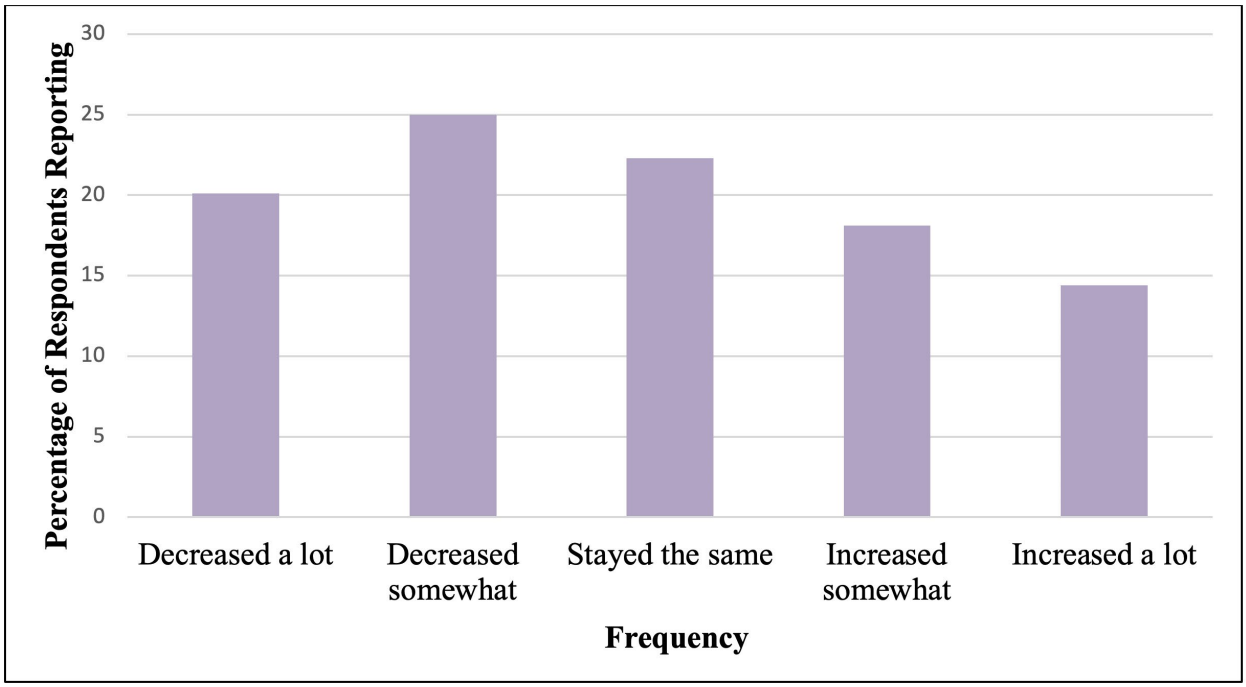
[a] Total percentage may not equal 100 due to rounding errors. [b] Respondents were able to select more than one option, so total number of responses is greater than 452. [c] Extension nutrition and wellness programs were listed by name following this question on the survey.

Frequency of Food Procurement

Frequency of grocery shopping and/or food buying decreased somewhat or a lot according to 45% of respondents (Figure 1).

Figure 1.

Grocery Shopping or Food Buying Frequency



Food Procurement and Preparation Practices

The food procurement and preparation practices of respondents are presented in Table 2. The majority of respondents (52.9%) continued trips to the grocery store as their means of procuring food. Nearly two thirds (64.2%) reported that at-home food preparation increased somewhat or a lot due to the pandemic. Similarly, 36.3% indicated being extremely comfortable with daily food preparation. About half (52.2%) consumed food prepared outside the home (including from restaurants via take-out, delivery, etc.) once or twice weekly.

Table 2.

Food Procurement and Preparation Practices

Characteristic	No.	% [a]
Sources of food procurement [b]		
Going to grocery store as before COVID-19	239	52.9
Going to the grocery store during special hours	130	28.7
Online grocery shopping and pickup from a local store	115	25.4
Restaurants and fast food (e.g., take out, delivery)	110	24.3
Grocery delivery service from local a local store	54	11.9
Family	49	10.8
Ordering food from an online vendor (e.g., Amazon)	43	9.5
School	16	3.5

Neighbors	15	3.3
Home meal delivery service (e.g., Blue Apron, Hello Fresh)	13	2.9
Meals on Wheels/home-delivered meals	8	1.8
Impact of COVID-19 on food preparation at home		
Increased a lot	149	33.0
Increased somewhat	141	31.2
Stayed the same	145	32.1
Decreased somewhat	13	2.9
Decreased a lot	4	0.88
Comfort level with preparing food multiple times daily		
Extremely comfortable	164	36.3
Somewhat comfortable	151	33.4
Neither comfortable nor uncomfortable	98	21.7
Somewhat uncomfortable	29	6.4
Extremely uncomfortable	10	2.2
Frequency of eating meals from outside home		
None	122	27.0
1 to 2 times weekly	236	52.2
3 to 4 times weekly	71	15.7
5 to 6 times weekly	12	2.7
More than 6 times weekly	11	2.4

Note. n = 452.

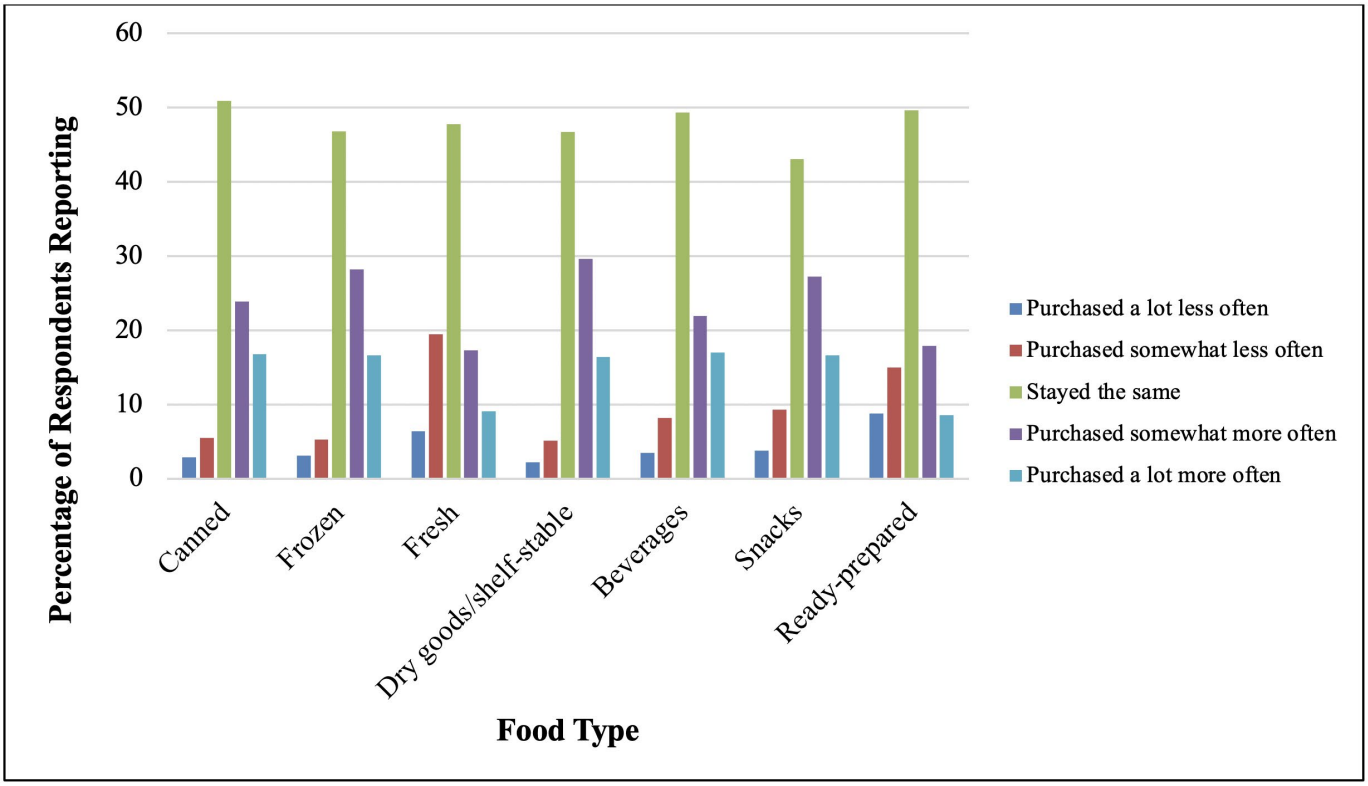
[a] Total percentage may not equal 100 due to rounding errors. [b] Respondents were able to select more than one option so total responses is greater than 452.

Food Purchased

Figure 2 shows the types of food products being purchased at the start of the pandemic. Across all food types, majorities of respondents (74.2% to 92.7%) indicated that their purchasing stayed the same or increased. Nearly half of respondents reported purchasing dry goods, frozen foods, and snacks somewhat or a lot more often (46%, 44.8%, and 43.8%, respectively) due to COVID-19. About one quarter of respondents reported purchasing fresh foods and ready prepared foods somewhat or a lot less often (25.9% and 23.8%, respectively) due to the pandemic.

Figure 2.

Changes in Types of Food Purchased



General Health Impacts

The perceived impacts of the pandemic on respondents' general health practices are presented in Table 3. Food safety awareness responses were evenly split across the three awareness levels. Half of respondents (50.2%) were somewhat or a lot less physically active. Finally, 64.1% were somewhat or very stressed.

Table 3.

General Health Impacts on Respondents Due to COVID-19

Characteristic	No.	%
Food safety guidelines awareness		
Awareness stayed the same	150	33.2
Awareness increased somewhat	152	33.6
Awareness increased a lot	150	33.2
Impact of COVID-19 on physical activity		
A lot less physically active	91	20.1
Somewhat less physically active	136	30.1
No change	151	33.4
Somewhat more physically active	60	13.3
A lot more physically active	14	3.1

Stress level		
Not at all stressed	30	6.6
Not very stressed	40	8.8
About the same as it was before COVID-19	91	20.1
Somewhat stressed	199	44.0
Very stressed	91	20.1
Missing	1	0.22

Requested Resources

Respondents were asked what COVID-19-related food, nutrition, food safety, or wellness resources would be helpful; 414 responded. They frequently requested information and resources regarding the following topics:

- meal ideas/recipes (e.g., budget recipes),
- food safety and general hygiene/safety (e.g., how to safely wash produce, whether sanitizing food packages is necessary),
- food access and food security (e.g., ways to address limited food delivery options, limited food options, lack of resources to purchase food),
- ways to stay active (e.g., family-friendly activities),
- immunity-boosting nutrition (e.g., general nutrition, functional foods),
- general wellness, and
- mental health information.

Respondents also expressed interest in sources of easy-to-understand information and reliable resources available via websites or email lists and in printed form. For example, one respondent requested resources that were "consistent and concise and factual, no opinions."

Discussion

These results are not generalizable due to the limited sample size and convenience sampling method. Also, the use of an online survey limited hearing from those without internet access. Compared to Iowa data, our sample was more racially diverse and younger. The sample was 79.2% White, whereas Iowa's population is 90.6% White (U.S. Census Bureau, 2020). Additionally, 87.6% of respondents in our sample were aged 18 to 64 years, whereas only 59.5% of Iowa's population is within that age range (U.S. Census Bureau, 2020). Despite these limitations, our findings provide valuable insights about the pandemic-related nutrition and wellness needs of current and prospective Extension clients. The results also suggest that the pandemic has led to changes in food behaviors, physical activity, and stress levels.

We found that the pandemic caused respondents to purchase frozen foods, dry goods, and snacks more often; shop less frequently; and do more home food preparation. Also, many respondents indicated that they were less physically active and more stressed due to the pandemic. Finally, respondents reported wanting access to reliable nutrition and wellness resources. Under these circumstances, Extension can assist by ensuring that people recognize Extension as the local resource for research-based information and can easily access that information. Given that the majority of respondents had not used Extension programming previously, Extension may be able to reach new clients who are seeking reliable information during the pandemic. Furthermore, this can be achieved by delivering programming through nontraditional means such as social media, YouTube, or other online video platforms, which allow for adhering to social distancing guidelines and reaching clients where they are. The Pew Research Center (2019) has reported that 72% of U.S. adults use at least one social media platform, and 86.3% of respondents in our study reported using social media, making social media a convenient way to reach clients with information.

Implications for Extension Professionals

Traditionally, Extension programming has focused on in-person education, which is impractical given the current social distancing directives. Therefore, innovative education approaches are needed. Extension has effectively used indirect education methods for health-related programming such as online programming, email-based newsletters, blended delivery (i.e., online lessons and in-person programming), and social media (e.g., videos, tips, visuals) to promote awareness of health behaviors, increase knowledge, and promote behavior change (Bahl & Francis, 2016; Campbell et al., 2013; Case et al., 2011; Elmer et al., 2016; Francis, 2014). Although Extension has used these indirect education methods effectively, there are challenges regarding gathering data to examine the impact of this educational approach (O'Neill, 2014; Tobey & Manore, 2014). More research is needed to measure both the reach of indirect education and its impact.

Many of the desired informational topics identified are commonly addressed by Extension nutrition and wellness programming. Thus, this situation affords the chance to revise and repackage existing materials and integrate them into a new delivery method. In Iowa, Extension state specialists were able to respond quickly at the start of the pandemic by assessing existing resources and adapting them to respond to customer needs. As the data from our survey were received, we were better able to target the needs identified rather than rely on national data. Further, because nearly half of our respondents were classified as experiencing food insecurity, many of the recommendations we made were budget friendly. We disseminated information through press releases, electronic newsletters, online videos, and websites and social media outlets.

- **Press Releases.** To address the immediate questions of residents at the start of the pandemic, we produced a press release series (11 posts) that addressed food safety, general health and nutrition, and food security. The press releases were shared in traditional print media, on our COVID response website, on Facebook, and via Twitter. Topics were based on questions received by hotlines as well as trending topics on social media.

- ***Words on Wellness.*** We modified this monthly electronic newsletter (Bahl & Francis, 2016) to ensure that the topics were sensitive to social distancing guidelines and addressed the nutrition, physical activity, and food safety topics requested by our survey respondents. The identified topics from our survey are still being used to inform the newsletter articles. The online *Words on Wellness* newsletter was viewed 841 times at the peak of the initial shutdown.

- **Healthy and Homemade Quickinar.** We revised a standard workshop series into an online "quickinar" series focused on meal preparation. Quickinars are short videos (<15 min) that are focused on one topic and identify associated resources. Healthy and Homemade is a pick-and-choose three-part series of 2-hr workshops focused on food preparation (6 hr of total education). Due to the request for food preparation information in response to the pandemic, we revised this program into a four-part online quickinar series (60 min total education; https://www.extension.iastate.edu/humansciences/healthy-homemade). The topics were grocery shopping, meal planning and preparation, slow cooker meals, and produce intakes. Collectively, these quickinar videos have been played 296 times (48 finishes).

- ***Spend Smart. Eat Smart.* Facebook Live Video Content.** Our *Spend Smart. Eat Smart.* website and social media accounts target audiences with limited resources. We adjusted the *Spend Smart. Eat Smart.* social media schedule in response to the pandemic with a goal of making it easier for Iowans to stay active, with particular emphasis on families who have children spending more time at home than usual. Staff added live content twice weekly beginning near the start of the pandemic (late March 2020). One video each week featured simple at-home exercise requiring minimal equipment. Examples include stretching, cardio exercise, and strength exercises. The second video each week featured fun activities adults and children could do at home together. These videos featured staff and their children. Collectively, the Facebook Live videos represent 215 min of content, and at the time of this writing, the videos had been viewed 11,730 times.

Furthermore, our findings revealed that 32.3% of respondents had diagnosed depression and that 64.1% were experiencing stress levels due to the pandemic. These findings are alarming as increased risk of suicide deaths due to the pandemic has been reported (Reger et al., 2020). Extension is a unique, trusted community partner that can address these mental health concerns in traditionally underserved audiences. To address the pandemic-related higher stress levels of Iowans and associated mental health risks, the Family Life Extension team converted the Question. Persuade. Refer (QPR) program from an in-person program to online. The QPR program is a 1-hr suicide prevention program that trains people how to recognize the warning signs of a suicide crisis and how to question, persuade, and refer someone to help. In less than 6 months, the program was offered 35 times, with more than 525 individuals from 14 states and Canada participating.

Conclusion

The needs assessment method we used was quick and cost effective and enabled the collection of important and timely information during the pandemic. During public health crises, such as the COVID-19 pandemic, Extension can use such assessments to determine and quickly respond to client needs. By repurposing existing programming, Extension professionals can integrate information relevant to current circumstances into new programs and/or materials that meet specific health and wellness needs, such as those related to food preparation, food safety, physical activity, and mental health. This repurposing supports the timely response necessary during emergencies and public health crises by emphasizing key messages in online formats such as videos (e.g., Vimeo), social media (e.g., Facebook), and interactive online platforms (e.g., Adobe Connect).

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Appendix

Questionnaire

COVID-19, the disease caused by the new coronavirus, has impacted the lives of all Iowans. The next few questions will help us better understand how COVID-19 and social distancing has impacted your food and activity behaviors.

To what extent has COVID 19 affected your frequency of grocery shopping/buying food?

□
Increased it a lot
□
Increased it somewhat
□
Stayed the same
□
Decreased it somewhat
□
Decreased it a lot

To what extent has COVID 19 affected the type of your food purchased:

	Purchasing a lot more	Purchasing somewhat more	Stayed the same	Purchasing somewhat less	Purchasing a lot less
Canned foods					
Frozen foods					
Fresh foods					
Dry goods/shelf-stable foods					
Beverages					
Snack-type items					
Ready-prepared foods					

How have you been getting your food during COVID-19? (Mark all that apply?)

□ Online Grocery shopping and pick-up

□ Grocery delivery service

□ Going to the grocery store during special hours

□ Going to grocery store like you did before COVID-19

□ Ordering food online (e.g. Amazon)

□ Neighbors

□ Home meal delivery service (e.g. blue apron, hello fresh etc)

□ Family

□ Restaurants and fast food (take out, delivery)

□ Meals on wheels/home delivered meals

□ School

To what extent has COVID-19 affected your food preparation/cooking at home?

□
Increased it a lot
□
Increased it somewhat
□
Stayed the same
□
Decreased it somewhat
□
Decreased it a lot

What is your comfort level with preparing food multiple times per day?

□
Extremely comfortable
□
Somewhat comfortable
□
Neither comfortable or uncomfortable
□
Somewhat uncomfortable
□
Extremely uncomfortable

During the COVID-19 social distancing directives, how many times per week did you eat foods prepared outside the home? (Include restaurants, take-out, delivery, etc)

□ None

□ 1-2

□ 3-4

□ 5-6

□ More than 6

To what extent has COVID-19 affected your awareness of food safety guidelines?

□ Increased it a lot

□ Increased it somewhat

□ Stayed the same

How has COVID-19 affected your daily physical activity?

□ A lot less physically active

□ Somewhat less physically active

□ No change

□ Somewhat more physically active

□ A lot more physically active

Please rank your stress level since COVID-19:

□ Not at all stressed

□ Not very stressed

□ About the same as it was before COVID-19

□ Somewhat stressed

□ Very stressed

What COVID-19 related food, nutrition, food safety or wellness resources would be helpful to you?
[Open ended]

Food Security

I/We worried whether my/our food would run out before I/we got money to buy more.

□ Often true

□ Sometimes true

□ Never true

□ Don't know

The food that I/we bought just didn't last and I/we didn't have money to get more.

□ Often true

□ Sometimes true

□ Never true

□ Don't know

Social Media and Extension Programming Utilization

Do you use social media platforms?

□ Yes

□ No

□ I'm not sure

Have you used nutrition, wellness, or food safety programs or resources offered by Extension and Outreach?

Yes, I have used nutrition, wellness, or food safety programs or resources offered by Extension and Outreach.

No, I have not used nutrition wellness or food safety programs and resources offered by Extension and Outreach.

Demographics

What is your age? _____ (years)

To which gender identity do you most identify?

□ Female

□ Male

□ Transgender Female

□ Transgender Male

□ Gender Variant/Non-Conforming

□ Not Listed _____

□ Prefer not to answer

What is your current household income?

□ < $9,999

□ $10,000 to 12,999

□ $13,000 to 16,999

□ $17,000 to 19,999

□ $20,000 to 24,999

□ $25,000 to 29,999

□ $30,000 to 34,999

□ $35,000 to 39,999

□ $40,000 to 44,999

□ $45,000 to 49,999

□ $50,000 to 54,999

□ $55,000 to 59,999

□ $60,000 to 64,999

□ $65,000 to 69,999

□ $70,000 to 74,999

□ $75,000 to 79,999

□ $80,000 to 84,999

□ $85,000 to 89,999

□ $90,000 to 94,999

□ $95,000 to 99,999

□ $100,000 to 124,999

□ $125,000 to 149,999

□ $150,000 to 174,999

□ $175,000 to 199,999

□ $200,000 to 249,999

□ $250,000 and above

What is your ethnicity? (Select the category you identify with)

□ Hispanic or Latino

□ Not Hispanic or Latino

Which one or more of the following would you say is your race?

□ American India or Alaska Native

□ Asian

□ Black

□ Native Hawaiian or other Pacific islander

□ White

□ Other, please describe:

What is your preferred language for obtaining information?

□ Chinese

□ English

□ French

□ German

□ Spainish

□ Other: _____

What is the highest degree of school you completed?

□ Less than High School

□ High School/GED

□ Some College

□ Associates

□ Technical School

□ Bachelor's

□ Graduate

Are you...?

□ Divorced

□ Married

□ Separated

□ Single, never married

□ Widowed

General Health

Has a doctor, nurse or other health professional ever told you that you have any of the following? For each, respond Yes, No or I'm Not Sure.

Condition	YES	NO	NOT SURE
I have no medical conditions			
Angina (chest pain) or coronary artery disease			
Arthritis			
Depression			
Diabetes			
Food allergies			
High blood pressure			
High cholesterol			
History or current cancer diagnosis			

Kidney disease			
Lung disease (e.g. asthma, chronic obstructive pulmonary disease (COPD), emphysema or chronic bronchitis)			
Myocardial infarction or heart attack			
Oral health or mouth problems			
Osteoporosis			
Stroke			
Other (please list)			
