



Perceived Advantages and Disadvantages of Online Grocery Shopping among Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Participants in Eastern North Carolina

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ABSTRACT

This study's purpose was to qualitatively examine perceived advantages and disadvantages of online grocery shopping among participants ($n = 7$) in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Initial in-depth, qualitative interviews were conducted, after which participants completed an episode of online grocery shopping, picked up the online order at the store, and completed an in-store shopping episode and a follow-up in-depth interview. Interviews were audio-recorded, transcribed verbatim, and analyzed deductively. Participants stated that in-store impulse purchases occurred at the check-out and cookie aisles and included chips and candy, but sometimes healthier foods such as fruit. Advantages of online grocery shopping included ease, convenience, and saving time. Disadvantages included inadequate substitutions, the online shopping fee, lack of control over selection of perishable goods, and inability to find good deals online versus in the store. Further research is needed to determine how to encourage healthy grocery purchases online. *Curr Dev Nutr* 2020;4:nzaa076.

Keywords: online grocery shopping, impulse purchases, federal food-assistance programs, shopping practices, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

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Supplemental Tables 1 and 2 are available from the "Supplementary data" link in the online posting of the article and from the same link in the online table of contents at <https://academic.oup.com/cdn/>.

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Introduction

Obesity remains a major public health threat in the United States (1–4). The majority of excess dietary energy comes from items purchased in supermarkets and supercenters (5, 6). Supermarkets and supercenters are engineered to maximize sales, which include purchases of unhealthy items (7, 8). Thus, public health researchers are attempting to collaborate with store leaders to incorporate healthy food interventions within brick-and-mortar supermarkets and supercenters (9, 10). While online grocery shopping has been available since the early 2000s (11), online grocery shopping for perishables is only now gaining increased momentum (12). Early research suggests that grocery shopping online might help reduce unhealthy impulse purchases (13, 14). At present, there is both concern and hope that the online environment might also evolve and result in more targeted marketing and promotion of either unhealthy or healthier options (15).

There have been 3 US-based studies examining the feasibility and use of online grocery shopping among low-income individuals (16–18).

These studies were conducted in urban areas of the United States including Chicago (16), New York (17), and Baltimore (18), and none specifically recruited participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Learning about the use of online grocery shopping among WIC participants is important to inform future nutrition education attempts within WIC and to further inform ongoing online grocery shopping pilot studies occurring among participants in the Supplemental Nutrition Assistance Program (SNAP) (19, 20). Implementing online grocery shopping in federal food-assistance programs could potentially help encourage healthier food choices through providing increased access to nutrition information (21) and through reducing barriers to healthy food access experienced by low-income populations (22). Therefore, we conducted a pilot study to examine qualitative perceptions about the location and types of typical impulse purchases in the store, and the perceived advantages and disadvantages of online grocery shopping before and after an online shopping episode among 7 WIC participants.

Methods

Participant recruitment and enrollment

We recruited WIC participants from the Pitt County Health Department WIC clinic waiting room (Greenville, NC) using informational flyers. Eligible participants were enrolled in WIC, >18 y of age, a primary food shopper, and had never shopped for groceries online. Interested participants called the principal investigator and scheduled an enrollment visit, during which the study was explained, and informed consent was signed. This project was approved by the East Carolina University Institutional Review Board (UMCIRB# 16-001167).

Initial and follow-up in-depth interviews

At the start of the study, participants completed an initial in-depth interview, providing information about supermarkets/supercenters at which they shopped, commonly purchased items, restaurants frequented, impulse purchases, and their perspectives on the advantages and disadvantages of online grocery shopping. All interviews were conducted with the principal investigator, a PhD researcher trained in qualitative methods. After the in-depth interview, the participant was then instructed to order a maximum of \$30 worth of groceries online (each was provided a \$40 Visa gift card to cover a \$4.95 online shopping fee and taxes). The online grocery shopping episode occurred in the research office and participants arranged a time to pick up the groceries. Participants then completed an in-store shopping episode wherein they were instructed to purchase \$30 worth of groceries in the store (each was given a \$35 Visa gift card to cover the groceries and taxes). After completion of the in-store shopping episode, the participants completed a second in-depth interview, this time about their experiences with online shopping and the advantages and disadvantages of in-store versus online shopping. After each shopping episode (online and in-store), participants 3–7 were presented with their receipt and asked to record whether each purchase was an impulse or planned purchase. Participant 1 completed the in-store shopping exercise but did not complete the follow-up interview or receipt annotation because she was called away on a work emergency and the interviewer failed to obtain the receipt annotation for participant 2. Each participant received a \$10 gift card for completion of the initial in-depth interview and a \$15 gift card for the follow-up interview.

Data analysis

All interviews, including the online shopping and in-store shopping experiences, were audio-recorded and transcribed verbatim, resulting in 14 transcripts. Baseline and follow-up interviews and shopping experiences were analyzed separately. Four data-rich interviews (2 baseline and 2 follow-up) were read by 2 coders who came up with independent codebooks and operational definitions. The independent codebooks were reviewed and synthesized to create 1 consensus codebook, which was used by 3 coders (SBJP, SP, CJK). Each transcript was coded by 3 independent coders (SBJP, SP, CJK), and coding discrepancies were identified and reconciled by going through each transcript line by line. Final coding decisions were entered into Nvivo Version 11 (QSR International). Of particular interest, coders abstracted information about what was purchased on impulse and whether impulse purchases occurred online or in-store. Transcripts were analyzed to determine perceived advantages and disadvantages

TABLE 1 Ratio of impulse to total purchases in each modality (online vs. in-store)¹

| Participant ID | Impulse purchases/total purchases online | Impulse purchases/total purchases in store |
|----------------|--|--|
| 1 | NA | NA |
| 2 | NA | 4/10 = 0.40 |
| 3 | 4/8 = 0.50 | 4/9 = 0.44 |
| 4 | 3/11 = 0.27 | 13/19 = 0.68 |
| 5 | 2/9 = 0.22 | 1/10 = 0.10 |
| 6 | 3/10 = 0.30 | 1/6 = 0.17 |
| 7 | 4/10 = 0.40 | 1/5 = 0.20 |

¹NA, not applicable.

of online shopping, also comparing pre- with post-online shopping experiences.

Results

Participant characteristics

Seven participants were interviewed. Participants were, on average, 34.7 y of age (range: 29–44 y); all were female (1 couple jointly participated); 5 were African American and 2 were white; and participants had between 1 and 3 children <18 y old living in the household.

Participants discussed in-store and online impulse purchases comparing pre- and post-online shopping experiences, as well as the perceived advantages and disadvantages of online grocery shopping comparing pre- and post-online shopping episodes.

In-store impulse purchases

Table 1 shows the ratio of impulse to total purchases in each modality for participants 3–7. The ratio of impulse to planned purchases was higher online versus in the store for 4 out of 5 participants and impulse purchases were higher in-store versus online for 1 of the 5 participants.

Supplemental Table 1 shows planned versus impulse purchases made by each participant in each modality. Participants noted that impulse purchases were often those that were on sale and items that seemed like a good value for the money spent. Impulse purchases included sodas, items on sale, and treats (e.g., ice cream, potato chips). In general, participants noted that in-store impulse purchases were made on the candy, snack, chips, and check-out aisles, and were frequently unhealthy. However, 3 participants noted that impulse purchases were considered healthy (fruits and/or vegetables mentioned by participants 4, 6, and 7). Self-reported planned purchases included staples (e.g., cereals) or ingredients for a meal.

While most participants had more impulse purchases online versus in-store, participants also noted they were more tempted to make impulse purchases in the store, versus online, as participant 4 noted:

“In-store, definitely, gives me more of a chance to do like the impulse because I’m walking around and ... I’m seeing the prices and that kind of helps me ... calculate it in my head.... versus online it’s like you can’t virtually walk through and see everything that’s listed.”

Perceived advantages and disadvantages of online shopping

Supplemental Table 2 shows the differences in the frequency of each code and number of participants mentioning that code for perceived advantages (convenient, easy, saves time) and disadvantages (distrust, fee, order mix-up, and price) pre- and post-online shopping. Convenience was mentioned more frequently as an advantage post-online shopping, and price (e.g., higher perceived prices online versus in-store) was mentioned more frequently as a disadvantage post-online shopping. Below, we discuss each of these perceived advantages and disadvantages in greater detail.

Table 2 provides quotes regarding perceived advantages and disadvantages of online grocery shopping. As noted in Supplemental Table 2, commonly mentioned advantages were ease, time savings, and convenience. Participant 7 provided illustrative statements regarding the ease and convenience overall.

“...convenience is probably the biggest factor, especially for like a single mom. To have to lug her [young child] out of the car, get the stroller out.... So, that personal shopper definitely it’s an advantage of convenience to do the online.”

Participant 3 noted the advantage of not having to take children into the store:

“I just know if I shop online ... I can kind of be okay like with the kids. Don’t really got to be really worrying about them being so antsy like they would in an actual store”

Participant 4 reported on the perceived time-saving aspect of online shopping:

“Maybe it would be faster because you could probably do your order at home in your pajamas in the middle of the night, whenever, and then just drive up and pull up and have them load it into your car.”

Participants also noted the potential to reduce impulse purchases and save money:

“I’m thinking it would probably be cheaper because you would not have the expectations of ‘Oh, I have not had those cookies in a long time.... they look real good up there on that shelf Let me get a bag of cookies.’ And, just throw it in the cart.” —Participant 1

Participant 5 perceived an additional advantage as being able to determine needs based on looking at the food/beverage inventory at home. Finally, participants also remarked on how online shopping is particularly helpful for those who have physical limitations.

The most commonly mentioned disadvantages were distrust of the personal shopper’s ability to select the freshest and highest-quality items, inability to see good deals online, and the online shopping fee. Participants also noted the difficulty of comparing similar items (for quality, size, and cost per unit), perception that there are different (higher) prices online than in store (perhaps different deals online versus in-store), and concerns about product mix and availability online versus in the store.

Participants noted the difficulty of seeing deals online versus in the store:

“That’s the first thing I thought about that I have forgotten that I do check the mark-down cart or see if there is anything on sale

that I could get real cheap I don’t know if online if I saw any buy one, get one free....” —Participant 1

Participant 4 reported that potentially higher prices online were a disadvantage:

“So, that’s definitely another takeaway of the online, is that the prices seem to be higher and you can’t do anything ... I had to pay double for the same 8-ounce block of cream cheese.”

A few participants enjoy going into the store and see a disadvantage of online shopping as missing out on the joy of shopping.

Several participants, including participant 2, perceived the fees as a disadvantage:

“That \$5 processing fee, because I could have got \$5 more groceries.”

Many participants reported the perceived disadvantage of poor product quality if someone else is selecting the food/beverage items:

“The downfall is not being able to pick your items. So, like the fruits and vegetables, I don’t know if the person who’s doing my personal shopping knows how to pick out my vegetables the way I like it.” —Participant 7

When we asked if participants would be willing to grocery shop online again, most said they would do it occasionally, especially if they did not have the fee to pay. Additionally, participants reported that they would be more likely to use online shopping if it could save time or make shopping more convenient.

Discussion

We found that the majority of in-store impulse purchases occurred in the snack, chips, and cookie aisle and were considered unhealthy by the participants. This accords with findings from Cohen and Babey (8) regarding impulse purchases typically being nutrient poor, calorie-dense snack foods. However, some participants noted that impulse purchases were sometimes healthy foods on sale, such as fruit. Similar to prior qualitative studies (23–25), participants in this study noted advantages of online grocery shopping, such as saving time, avoiding crowds and lines, and not having to get out of the car in bad weather or when trying to purchase heavier/bulkier items. Participants cited disadvantages including distrust of the personal shopper to select high-quality items, the online shopping fee, and the difficulty finding deals online versus in the store, which also aligned with previous studies (17, 20, 26).

Online grocery shopping could streamline federal food-assistance benefit distribution, especially if SNAP and WIC begin to allow online grocery purchases and be connected with online nutrition education provided within benefit programs more efficiently (27). For example, WIC Nutrition Education could be delivered online, and this could be delivered in tandem with online grocery shopping lists that include healthier, WIC-approved items (27).

This study is limited by several factors. For example, the order in which the shopping occurred may have biased results, as all participants completed the online shopping first. Online shopping was also a novelty, so participants may have just ordered novel items using this novel modality. While the researcher tried to minimize her role as a

TABLE 2 Perceived advantages and disadvantages of online grocery shopping among WIC (n = 7) participants before and after online shopping¹

| Participant | Perceived advantages before | Perceived advantages after | Perceived disadvantages before | Perceived disadvantages after |
|-------------|--|--|--|--|
| 1 | Reduce impulse purchases: "It would probably cut down on the excessive stuff. It might be cheaper because you're just sticking to what you need and you're not being drawn into those sales and ending up with a whole bunch of stuff you don't need. Like 20 things of toothpaste because I have a coupon." | None noted. | More difficult to spot deals online versus in store: "Well, I'm thinking, would it be, would the online stuff ... oh, another thing I like to do is, is I like to find the mark down section at the grocery store And see I might just look. I go there every time. So, with online I might not be able to see the markdown." | More difficult to spot deals online versus in store: "And then you get the, sometimes the deals with the meats that are marked down ... And you wouldn't necessarily see that." |
| 2 | Saves time: "Avoiding the lines ... it saves time you don't have to ... worry about having the stroller, putting the baby in the car and then going up and down the aisle, you just go sit in front the computer or smartphone, just click, click ... somebody else does the work for you." | Easy/convenient: "If, you need something from the grocery store ... Like my daughter, she's little, and if I wanted to go grocery shopping I wouldn't have to really take her out of the car, I could just, you know, just pull up and get my groceries." | Poor product quality/distrust of personal shopper: "somebody might not pick out the, the, um, best looking item ... when you say you might want bananas, they might pick you out them um ... the real ripe ones instead of picking out the greener ones so they'll last longer." | Problems with the website: "You just have to know the categories in which the items you're looking for are located. Because when I did my online shopping, ... I just didn't really know where to look for them at." Enjoys going into the store: "Really cool seeing people." [doesn't get to see them when shopping online] Having to wait to pick up items: "You get your stuff right then and there [in the store] instead of having to select a time." Store employees are not available online to help with questions: "like online, if you have a question or anything or you're lost, you can't really get help ... But, in here they got people by the cash register, and they are able to help you out with your every need." |
| 3 | Easy/convenient: I guess you get to mainly, like, relax and stuff, not having to actually go down aisle by aisle, just relax or something. You know, focus on, you know, the screen and put down what you want in your little cart So you can pretty much just relax instead of doing all that walking. | Easy/convenient: "I guess with the online shopping you don't have to wait like instead of having to wait for a line and waiting for your turn to come up next, you have a time to come and stuff's already ready. I like that. It's so chaotic, so much traffic in here [the store]" | Having to wait to pick up items: "the wait, and going to get it. I like just having it right there when I pay for it." Missing or incorrect items: "Um, maybe they don't have the brand that you want, or you may get the wrong things off of it" | |

(Continued)

TABLE 2 (Continued)

| Participant | Perceived advantages before | Perceived advantages after | Perceived disadvantages before | Perceived disadvantages after |
|-------------|--|---|---|---|
| 4 | <p>Convenient for those who have physical limitations: "My perception has always ... this is for like maybe elderly people or people who are sick and can't necessarily get out the car and walk around the grocery store or maybe somebody that has a new baby."</p> <p>Easy/convenient: "...it's easier. You just stay in your car, you pull up, and they load everything that you had on your list into your car. It's definitely very easy, very convenient."</p> <p>Easy/convenient: "it seems like a really good idea to avoid pester power or just to simplify a trip a whole lot."</p> <p>Could see deals more easily online: "Could see the deals more easily."</p> <p>Saves time: "a big time-saver"</p> | <p>Easy/convenient: "... it was convenient, where you know, like assuming I was doing it at home, I can just click through at my own leisure and you can put your stuff in the cart and almost like due like a virtual grocery list. I can leave it and come back to it if I wasn't gonna place that order for pick-up today.... It was really easy to be honest with you. I didn't even ... I've never done before and I didn't expect it to be that easy."</p> <p>Easy/convenient: "Scheduling and convenience ... Timing, like being able to just do it and pick a time to pick it up..."</p> <p>Saves time: "guess a disadvantage is it seems to take more time in the store. ...I don't know. At home, we could be doing other things at the same time."</p> <p>Saves time and potential for discounts: "Advantage is time. You know it saves on time ... I probably would think that they offer some type of discount, maybe, for you shopping online."</p> | <p>Associated fees: "And, I know that there is a fee with it, so you know I'm all about saving money so why would I pay when I can just go down and pick out my own things."</p> <p>Poor product quality: "... maybe if I get a bad batch of strawberries ... so maybe the person picked out one that wasn't as fresh as I would have liked for it to be. ... if you had a list and they forgot one of your items." Higher prices online: "...cause I feel like they're more expensive online."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> | <p>Enjoys going into the store: "I like coming in the store 'cause you can find deals, you know, in-store ... It's that you might miss out on some deals that otherwise, if you hadn't come in the store ..."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> |
| 5 | <p>Convenient for those who have physical limitations: "My perception has always ... this is for like maybe elderly people or people who are sick and can't necessarily get out the car and walk around the grocery store or maybe somebody that has a new baby."</p> <p>Easy/convenient: "...it's easier. You just stay in your car, you pull up, and they load everything that you had on your list into your car. It's definitely very easy, very convenient."</p> <p>Easy/convenient: "it seems like a really good idea to avoid pester power or just to simplify a trip a whole lot."</p> <p>Could see deals more easily online: "Could see the deals more easily."</p> <p>Saves time: "a big time-saver"</p> | <p>Easy/convenient: "So, that saves time the workers know where everything is ... because they can get to the stuff a lot quicker than we can ... The time saver and, you know, ... Make your grocery list and, then, send it</p> | <p>Associated fees: "And, I know that there is a fee with it, so you know I'm all about saving money so why would I pay when I can just go down and pick out my own things."</p> <p>Poor product quality: "... maybe if I get a bad batch of strawberries ... so maybe the person picked out one that wasn't as fresh as I would have liked for it to be. ... if you had a list and they forgot one of your items." Higher prices online: "...cause I feel like they're more expensive online."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> | <p>Enjoys going into the store: "I like coming in the store 'cause you can find deals, you know, in-store ... It's that you might miss out on some deals that otherwise, if you hadn't come in the store ..."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> |
| 6 | <p>Convenient for those who have physical limitations: "My perception has always ... this is for like maybe elderly people or people who are sick and can't necessarily get out the car and walk around the grocery store or maybe somebody that has a new baby."</p> <p>Easy/convenient: "...it's easier. You just stay in your car, you pull up, and they load everything that you had on your list into your car. It's definitely very easy, very convenient."</p> <p>Easy/convenient: "it seems like a really good idea to avoid pester power or just to simplify a trip a whole lot."</p> <p>Could see deals more easily online: "Could see the deals more easily."</p> <p>Saves time: "a big time-saver"</p> | <p>Easy/convenient: "So, that saves time the workers know where everything is ... because they can get to the stuff a lot quicker than we can ... The time saver and, you know, ... Make your grocery list and, then, send it</p> | <p>Associated fees: "And, I know that there is a fee with it, so you know I'm all about saving money so why would I pay when I can just go down and pick out my own things."</p> <p>Poor product quality: "... maybe if I get a bad batch of strawberries ... so maybe the person picked out one that wasn't as fresh as I would have liked for it to be. ... if you had a list and they forgot one of your items." Higher prices online: "...cause I feel like they're more expensive online."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> | <p>Enjoys going into the store: "I like coming in the store 'cause you can find deals, you know, in-store ... It's that you might miss out on some deals that otherwise, if you hadn't come in the store ..."</p> <p>Having to plan day around picking up groceries: "So, you'd have to definitely plan it so that it would be like your last stop before going home. Which you might do that anyway, if you were coming to buy groceries that were like refrigerated anyway."</p> <p>Seeing items/deals in the store: "easier to see the deals easier to remember things we might want [in the store]"</p> <p>Poor product quality: "like we wouldn't have bought the bananas or the oranges online. ... 'cause we wanna come out and find the fresh ones. Same with bread not being able to pick your own produce, um, like they would just pick out whatever."</p> <p>Missing or receiving the wrong items: "That's a disadvantage because when you're in the store yourself you know you can go ahead and pick your product, the one that you're gonna replace it with"</p> |

(Continued)

TABLE 2 (Continued)

| Participant | Perceived advantages before | Perceived advantages after | Perceived disadvantages before | Perceived disadvantages after |
|-------------|--|---|---|---|
| 7 | <p>Convenient: "... I would think that that would be the only thing, like convenience." Easier: "But, essentially, I like how easy it is though, like if you find it on the flyer and you want it, you click on it and it's gonna pop up with all the stuff that qualifies for it."</p> | <p>out. And, by the time you get off of work, they'll pick out your food. And, that would work great for single parents or parents who have a really busy life" Easy/convenient: "online, you don't actually have to do the foot work. You don't have to walk around the store. They'll bring it out to you. They'll even load you up. You just sit there in your car"</p> | <p>make sure all of them are not broke?" Difficult to compare prices: "I look for my prices per unit when I get the meat then compare the size of the package, but now I don't have the size right here. I have to go by reading very carefully." Seeing items/deals in the store: "I'm used to being hands-on. I could pick it up compare the ounces and look at the price."</p> | <p>Poor product quality: "I like looking at the meat and turning it over and looking at the expiration date. I'm not sure if the workers pay that much attention to detail when they're shopping for others, 'cause they've got a big list and maybe more than one order and just moving as fast as they can" Higher prices online: "'cause in the flyer they don't put all the sales in there. Sometimes you have to come to the store and look for the sales." Higher prices online: "Another disadvantage though was the not being able to like if you don't pick it up that day, you don't get the deal that you saw online" Missing or receiving the wrong items: "not everything is available online, so it's a disadvantage too. Like we couldn't find that bakery bread online."</p> |

¹WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

public health nutrition scientist, this fact, combined with the study occurring in the research office, may have influenced participants to be more health conscious than the normal population. Thus, participant bias and researcher bias may have affected results. This study had a small sample size, limiting our ability to generalize findings to broader populations. However, data saturation was reached regarding key themes related to perceived advantages and disadvantages. Finally, participants were not spending their own money but were given gift cards to complete each shopping episode, which may have influenced what was purchased. Strengths include the detailed quotations and the use of actual shopping experiences among participants.

Future studies using larger and more representative samples are needed to fully understand the potential for online grocery shopping to improve public health nutrition. In order to reduce the high level of per-observation investment in the current study, future studies with larger samples could include collecting automated purchase data via loyalty cards and the use of individuals' own financial resources to simulate the real-world experience. Due to increasing interest in incorporating online grocery shopping into federal food-assistance programs (19), it is critical to consider and test ways to encourage healthy purchasing in the online modality.

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