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Barriers and Facilitators to Online Grocery Shopping Among Supplemental Nutrition Assistance Program (SNAP) Participants: A Mixed Method Study

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ABSTRACT


This mixed methods study explored online grocery shopping perceptions by surveying individuals who do and do not receive SNAP benefits ($n = 129$) and by conducting interviews with SNAP recipients ($n = 26$) who have grocery shopped online. T-tests assessed survey findings, codebook thematic analysis was used to identify qualitative themes, and results were interpreted collectively. Survey results found no differences in perceptions of online grocery shopping between SNAP and non-SNAP recipients (p -values = 0.2-1.0) and that 97% of SNAP recipients felt comfortable using SNAP online. Five qualitative themes were identified and provided context to the survey results. The study findings can inform policy actions within SNAP.

KEYWORDS

Food retail; grocery shopping; mixed methods; online; Supplemental Nutrition Assistance Program (SNAP)

Introduction

The Supplemental Nutrition Assistance Program (SNAP) is a federal nutrition program, administered by the United States Department of Agriculture (USDA), that provides monthly food benefits for over 42 million income-eligible individuals and families using an Electronic Benefit Transfer (EBT) card (USDA 2018, 2024). SNAP participants can use their EBT card at authorized retailers to purchase food, similar to a debit card (USDA 2018). SNAP benefits can be used to purchase most household food items such as fruit and vegetables, meat/poultry/fish, dairy products, breads and cereals, snacks, and nonalcoholic beverages (USDA 2023). Some food items such as hot/prepared foods, alcohol, and pet food are not permitted to be purchased with SNAP benefits (USDA 2023). The SNAP Online Purchasing Pilot (OPP)

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allows households to use their SNAP EBT cards to purchase groceries online from authorized retailers. The pilot was mandated in the 2014 Farm Bill (The Agricultural Act of 2014) and was intended to test the feasibility of accepting SNAP benefits online (USDA Food and Nutrition Service 2016).

With the emergence of the COVID-19 pandemic in 2020, and the need to remain socially distant, the OPP rapidly expanded across many states, with all 50 states and the District of Columbia now offering this program and subsequently expanding SNAP access through online shopping to nearly 90% of SNAP recipients (USDA 2020, 2022). However, studies have shown that certain population groups such as those living in rural communities and areas with lower store density (Foster et al. 2022; McGuirt et al. 2022), those with limited digital literacy (Trude et al. 2024) or those who are older (Rummo et al. 2022) may experience barriers to accessing online shopping. SNAP recipients can use their EBT card online to pay for SNAP eligible foods and beverages but must use their own funds to pay for other fees, such as delivery and membership fees. There has been growth in online redemptions of SNAP over the past few years (Jensen et al. 2021; Jones 2021).

Exploring online shopping preferences and perceptions is an important area of research, as there is emerging evidence that there may be benefits to online shopping for SNAP recipients. One critical benefit of online shopping for SNAP recipients is that it creates a more equitable shopping experience, allowing SNAP recipients to have the same options for shopping modalities as other shoppers who do not use federal nutrition program benefits (Gupta et al. 2023). In addition, recent studies have successfully tested strategies to encourage shoppers with limited incomes to make healthier purchases in the online shopping space. One study indicated the strong potential for SNAP households and households from rural areas utilizing online shopping to increase the overall quality of food in the household (Gustafson et al. 2022). In this study, individuals participating in an online shopping condition with healthy “nudge” messaging increased their fruit and vegetable purchases more than individuals in a traditional brick and mortar shopping condition (Gustafson et al. 2022).

Another pilot study found that providing food insecure individuals with an online shopping cart prefilled with healthier items enabled participants to make more healthier purchases, as compared to groups that received traditional nutrition information/education and were then encouraged to grocery shop online (Coffino, Udo, and Holmes 2020). Further, the expansion and digitalization of online grocery shopping has the potential to increase the availability and accessibility of food for households with limited access to affordable and acceptable brick and mortar food retailers, by providing a wider variety of foods through participating SNAP retailers, while creating mechanisms for grocery delivery that alleviates transportation barriers some individuals may face (Granheim et al. 2022). Finally, as SNAP participation

continues to grow among the elderly (Giordano et al. 2022), online shopping with curbside pick-up and/or home delivery has the opportunity to reduce the physical burdens of grocery shopping, such as walking through the store or lifting and carrying heavier items such as gallons of milk.

Between May and July 2020, approximately 2% to 17% of SNAP recipients shopped online for groceries on a monthly basis (Polselli et al. 2021). However, online redemptions still only made up 3% of the \$8.1 billion in SNAP benefits redeemed in December 2020 (Jones 2021), although a United States Department of Agriculture (USDA) Economic Research Service study found that SNAP redemptions for online grocery shopping grew nearly 86 times from \$2.9 million in February 2020 to \$246 million in December 2020 (Jones 2021). In another study, 58% of those who used SNAP EBT to purchase food online during the pandemic report planning to continue to use online shopping with SNAP (Jensen et al. 2021). Taken together, these data indicate that online grocery shopping with SNAP is increasing but still only used by a small proportion of SNAP recipients.

Despite the expansion of SNAP OPP access and the potential benefits of shopping online, there remains reluctance among SNAP recipients and low-income consumers to utilize benefits online (Martinez et al. 2018; Rogus et al. 2020; Trude et al. 2022). Barriers reported include that SNAP recipients perceive that online shopping is more costly, they want to select foods themselves, have distrust of stores' abilities to select high-quality foods, enjoy the in-store shopping experience, and see barriers to learning a new method or system of shopping for food online (Cohen et al. 2020; Martinez et al. 2018; Rogus et al. 2020; Trude et al. 2024). Research suggests that the convenience, free shipping or delivery of groceries, and discounts may encourage SNAP recipients to utilize their EBT benefits for online grocery shopping (Martinez et al. 2018; Rogus et al. 2020). Yet, it is important to note that much of this research has been done with SNAP recipients who do not have experience shopping online. Only one study to date has explored these issues with shoppers with limited incomes, including SNAP recipients, who have actually shopped online (Trude et al. 2021). This previous study found that individuals with prior experience with online grocery shopping had more favorable opinions about online grocery shopping than those who had never tried it (Trude et al. 2022). Additionally, it is unclear whether these barriers identified in the literature are unique to federal food program recipients or that they are issues/concerns all consumers have about online grocery shopping (Jilcott Pitts et al. 2020; Pitts et al. 2018).

As society establishes a post-pandemic, "new normal" related to online and in-person grocery shopping, the literature related to consumer preferences for, and barriers to, online shopping is limited, particularly for federal food assistance program recipients. National-level data on food purchasing indicate that those who grocery shop online are currently more likely to have higher

incomes (Duffy et al. 2022; Zatz et al. 2021), and there are documented barriers to uptake of online grocery shopping among SNAP recipients (Martinez et al. 2018; Rogus et al. 2020; Trude et al. 2022). Thus, it is unknown if the barriers, facilitators, and perceptions of SNAP and non-SNAP recipients is similar. For example, we do not know if SNAP and non-SNAP recipients express similar perceptions of online shopping or if there are unique challenges for SNAP recipients such as concerns or issues with using SNAP EBT cards online.

For the SNAP OPP to be effective in the long term, there needs to be a deeper understanding of how this program can help SNAP recipients utilize their benefits in ways that provide an equitable experience to all other shoppers. For online shopping to be able to improve purchasing power and enhance healthful purchasing behaviors, research needs to help examine how to modify this food shopping platform for all audiences it serves. Therefore, the research questions for this study are as follows:

- (1) What are consumer preferences for and perceptions of online shopping? Do they differ among individuals who receive SNAP benefits (SNAP recipients) and other shoppers who do not receive SNAP benefits (non-SNAP recipients)?
- (2) What are the perceived barriers and facilitators to online shopping for SNAP recipients who have experience with online grocery shopping?

Materials and methods

Study design

This study used a convergent parallel mixed methods design where the quantitative and qualitative data collection occurred concurrently (Creswell and Plano Clark 2011). The quantitative and qualitative data collection components did not influence each other during data collection and analysis and instead were brought together during interpretation which allowed for triangulation of findings across the two study methods (Creswell and Plano Clark 2011; DeCuir-Gunby and Schutz 2017). This study was part of a larger online pilot grocery shopping intervention study (Gustafson et al. 2022) that recruited shoppers from five rural and three urban counties across three different states (Kentucky, North Carolina, and Maryland) to participate in an 8-week intervention. In the parent study, participants were randomly assigned to one of the three study arms: 1) a control group that was encouraged to continue traditional (brick-and-mortar) grocery shopping, 2) an online shopping group that was encouraged to conduct a majority of their grocery shopping online for 8 weeks, and 3) an online shopping + healthy “nudges” intervention group that was encouraged to exclusively grocery shop online for 8 weeks and received weekly text message “nudges” to help

with healthy meal planning, recipes, and reminders to shop online (Gustafson et al. 2022). A detailed description and findings of this parent study are published elsewhere (Gustafson et al. 2022).

Participant sample & recruitment

This study includes quantitative data from a baseline survey that was collected from participants as part of the parent intervention, which included both SNAP ($n = 40$) and non-SNAP recipients ($n = 89$), as well as qualitative semi-structured interview data focused on SNAP recipients who participated in the online shopping arms of the intervention ($n = 26$). The quantitative survey data collection occurred before the intervention and the qualitative interview data collection occurred post-intervention. This sampling strategy, of including both SNAP and non-SNAP recipients for the quantitative data collection and focusing exclusively on SNAP recipients for the qualitative data collection, is unique and aligns with the research questions for this study to deepen our understanding of barriers and facilitators of online shopping to inform SNAP policies.

Participants for the quantitative component of the study were recruited using a community-based approach and leveraged existing partnerships (such as Extension offices) to post Facebook advertisements on each partner organization's Facebook page, as well as in-person/on-sight recruitment at local grocery stores. The counties included in this study were selected based on having a high percentage of SNAP recipients, access to online shopping services that accepted SNAP/EBT tender, or brick-and-mortar grocery stores that accepted SNAP/EBT tender. To be eligible for this study, participants had to be 1) 21 years old or older, 2) the primary shopper for the household, 3) English-speaking, 4) have a cell phone with text messaging capabilities, 5) have a device (cell phone, tablet, computer, etc.) with internet capabilities, and 6) have agreed to participate in the intervention.

At the conclusion of the 8-week intervention, all SNAP recipients who participated in one of the online grocery shopping arms of the parent study and completed the entire intervention including the survey data collection ($n = 34$, out of 40) were invited to participate in the qualitative interview portion of the study to gain additional insight into their experience of grocery shopping with SNAP online. In total, 26 participants completed interviews with members of the research team trained in qualitative research methods (26 of 34, 76% response rate). Participants received a \$50 or \$75 gift card for participating in the interview (\$75 gift cards were provided to participants who opted-in to an additional, unrelated part of the study). All aspects of this study were approved by the Institutional Review Board at the University of Kentucky (IRB protocol No. 61763). Informed consent was obtained electronically from all research

participants prior to data collection via REDCap (Vanderbilt University, Nashville, TN, USA), a secure online survey and database application.

Quantitative data collection and analysis

The quantitative survey data was collected over the phone by trained research staff and graduate student data collectors at the University of Kentucky in August 2021. The survey included questions on demographic information, general shopping behaviors, and online shopping perceptions, preferences, and barriers. Survey questions were taken from previously published research (Cohen et al. 2020; Jilcott Pitts et al. 2020; Pitts et al. 2018; Trude et al. 2022). Data was entered into REDCap in real time during data collection. Missing data and outliers were checked and recollected if possible and uploaded into Stata version 16.0 for analysis (StataCorp LLC, College Station, TX, USA). Data analysis included descriptive statistics on survey responses, including means and frequency measures for the total sample, and for SNAP and non-SNAP recipients. Inferential statistics (t-tests) were used to assess differences between survey responses in the SNAP recipient and non-SNAP recipient groups. Alpha < 0.05 was considered statistically significant.

Qualitative data collection and analysis

The interviews were conducted over the phone by a trained graduate student (B.C.) and research staff (R.G. and E.D.) between October and November 2021. Interviewers used a semi-structured interview guide that asked the SNAP recipients about preferences, including barriers and facilitators, for online grocery shopping and about using SNAP/EBT online. The interview guide also included questions about food access, food purchasing habits, food resource management, and anticipated maintenance of online grocery ordering. Upon completion of 26 interviews the data collectors (B.C., R.G., and E.D.) identified that there were no new themes in the data, meaning that saturation had been reached (Glaser and Strauss 2017) and that the interviews had captured an adequate level of information power (Malterud, Siersma, and Guassora 2016).

Interviews were audio recorded and transcribed verbatim using the Rev.com transcription service. Interview transcripts were checked for accuracy by the data collectors and any identifiable information shared by the participant was removed before being uploaded into NVivo version 12 for analysis (QSR International LLC, Melbourne, Australia). The qualitative analysis used a codebook thematic analysis approach with iterative inductive and deductive generation of codes (Braun and Clarke 2006, 2023). Using the interview guide for direction, an initial codebook was developed with *a priori* codes by a coding expert (M.B.). One transcript was randomly selected to confirm *a priori* codes via supportive text segments. Additional

codes were identified by the coders and added to the codebook during this initial coding process. The final codebook was assessed and approved by other coders (E.D. and B.C.) and uploaded into NVivo. A coding protocol was developed and applied by all coders. Two study team members double-coded three initial interviews (E.D. and B.C.), and inter-rater reliability (IRR) scores were assessed. Discrepancies between coding were discussed among coders (E.D. and B.C.) and then were resolved. If resolutions could not be made, a third reviewer (M.B.) was consulted and resolved code discrepancies. An IRR was calculated, and a Kappa value = 0.75 was achieved among coders after double coding three transcripts, and the remaining 23 transcripts were coded independently. Iterative discussions by the coding team, supported by running queries and examining coding frequencies, were used to identify themes.

Mixed methods data integration

Mixed methods study designs are strengthened by the collective interpretation of the data collection strands that yields more robust and synergistic results than either strand could independently (Creswell and Plano Clark 2011). For this study, theme matrices were developed from the qualitative results, then layered with the corresponding quantitative data and examined for areas of concordance for triangulation of findings (Creswell and Plano Clark 2011; Lincoln and Guba 1990). Any areas of discordance between the two strands were also explored. These matrices were reviewed and iteratively discussed by research team members, to identify and develop mixed methods results.

Results

Study population

The total sample ($n = 129$) for the quantitative survey was predominately white females, with at least some college education (82%), and 73% had an annual income of \$69,000 or less (Table 1). When examining the groups by SNAP status, the non-SNAP recipients had various income levels, indicating that there was likely a mix of individuals who were eligible for SNAP, but did not participate in the program, along with individuals with higher incomes who were not eligible to receive SNAP benefits. The qualitative sample ($n = 26$) was also mostly female, approximately half Black or African American (46%) and half white (54%), 77% had incomes less than \$49,000, 38% had a college degree, over 80% had a child living at home (there was an average of 2 children per household), and all reported receiving SNAP benefits at the time of data collection.

Table 1. Sociodemographic characteristics of the quantitative and qualitative data collection strands.

Study Participant Descriptive	Quantitative Survey Sample			Qualitative Interview Sample
	SNAP Recipients (n = 40)	Non-SNAP Recipients (n = 89) ^a	Total (n = 129)	Total (n = 26) ^a
Gender				
Female	98% (n = 38)	95% (n = 87)	95% (n = 125)	96% (n = 25)
Male	2% (n = 2)	5% (n = 1)	4% (n = 3)	4% (n = 1)
Age (Mean±Standard Error)	39 (1.13)	43.49 (1.35)	42 (1.04)	40.07 (7.65)
Education				
High School or Less	28% (n = 15)	18% (n = 9)	21% (n = 24)	27% (n = 7)
Some College	45% (n = 11)	24% (n = 16)	24% (n = 27)	35% (n = 9)
College Degree	26% (n = 14)	57% (n = 63)	47% (n = 77)	38% (n = 10)
Race				
Asian	0% (n = 0)	1% (n = 3)	1% (n = 3)	0% (n = 0)
Black or African American	24% (n = 14)	15% (n = 11)	18% (n = 25)	46% (n = 12)
White	76%(n = 26)	82% (n = 71)	80% (n = 97)	54% (n = 14)
Another Race ^b	0% (n = 0)	3% (n = 3)	2% (n = 3)	0% (n = 0)
Household Income				
Less than \$20,000	51% (n = 21)	4% (n = 3)	17% (= 24)	38.5% (n = 10)
\$21,000-\$49,000	24% (n = 11)	28% (n = 28)	27% (n = 37)	38.5% (n = 10)
\$50,000-\$69,000	24% (n = 8)	35% (n = 32)	29% (n = 39)	19% (n = 5)
\$70,000-\$99,999	0% (n = 0)	7% (n = 5)	7% (n = 5)	0% (n = 0)
More than \$100,000	0% (n = 0)	25% (n = 21)	20% (n = 21)	0% (n = 0)
Children in Household				
0	23% (n = 9)	4% (n = 3)	9% (n = 12)	19% (n = 5)
1-2	65% (n = 26)	48% (n = 43)	54% (n = 69)	50% (n = 13)
3 or more	12% (n = 5)	48% (n = 43)	37% (n = 48)	31% (n = 8)

^aTwo participants had incomplete or implausible demographic data, thus some the sum of some categories is less than the sample size stated in the column heading.

^bThe Another Race category includes all individuals who do not identify as Asian, Black, African American, or White.

Quantitative survey results

The quantitative survey had between 120 and 129 responses to each question (the variation was due to a small amount of missing at random data <7%). Overall, participants perceived online grocery shopping favorably (Figure 1). Notably, all SNAP recipients (n = 40, 100%), and nearly all non-SNAP recipients (n = 86, 97%) reported having reliable Internet access. Similarly, over 95% of SNAP recipients and nearly 90% of non-SNAP recipients disagreed or strongly disagreed that online grocery shopping websites were difficult to use. Over 80% of all respondents, collectively and in each group, perceived that online shopping saved time (as opposed to shopping in-person). Other logistical or financial factors associated with online shopping (e.g., access to delivery/delivery fees and minimum purchasing fees) made it less appealing to some participants, with approximately one-third or more of the sample reporting unfavorable responses to those questions. Importantly, the perceptions of online shopping did not differ between SNAP and non-SNAP recipients for any of the questions included in this survey (t-test p-values for each question ranged from 0.2 to 1.0

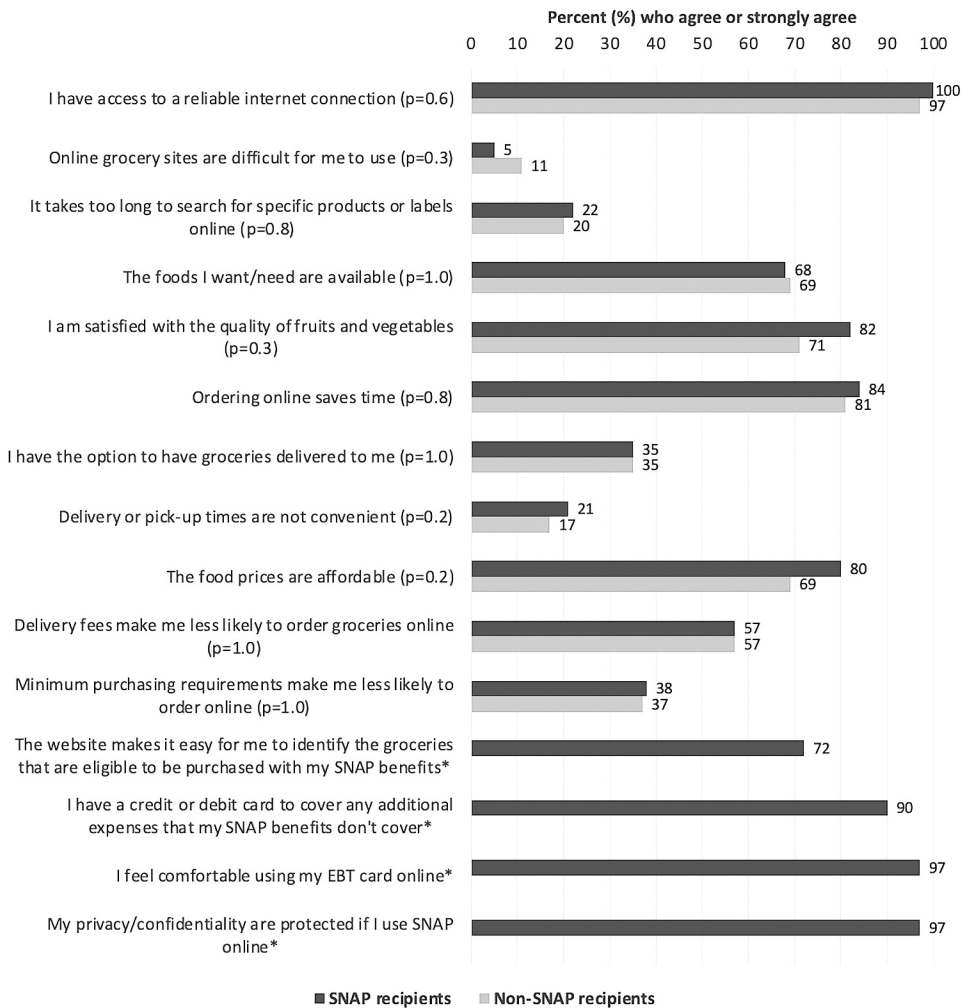


Figure 1. Perceptions of online grocery shopping among SNAP and Non-snap recipients (total $n = 120-129$). The number of respondents varied slightly per question due to N/A responses or missing data. P-values for each question ranged from 0.2 to 1.0, indicating no significant differences between groups. *Indicate the four questions only asked to SNAP-recipients.

[Figure 1]). Four questions specifically focused on the online grocery shopping experience of SNAP recipients, and these questions found that the majority of SNAP recipients felt comfortable using their SNAP/EBT card online, felt like their privacy and confidentiality would be maintained, and liked how they could identify SNAP-eligible products online.

Qualitative semi-structured interview results

Five major themes were identified from the qualitative interviews with 26 SNAP recipients about online grocery shopping: 1) challenges to online

shopping, 2) benefits of online shopping, 3) online shopping with SNAP/EBT, 4) financial factors related to online shopping, and 5) future use of online shopping. Each of the major themes had several sub-themes, which are described in the following paragraphs and supported by illustrative participant quotes in [Table 2](#).

Challenges to online shopping

Participants described both challenges and positive aspects of online shopping. Related to the challenges, three sub-themes were identified: 1) substitutions and stocking issues; 2) quality of items; and 3) scheduling and pick-up wait times.

Related to substitutions and stocking issues, participants described how multiple online shopping platforms handled substitutions, most of which alerted the customer to a substitution in advance and gave the customer options to select an alternative product, either through an automated platform or through direct communication with the professional shopper. However, the participants reported frustration with being told items were “out of stock” for their online order, yet when they went to the store at the time of order pick-up, they were able to find the item on the shelf in-store. As one participant described, *“I know you can choose substitutions and whatnot when you do the online shopping, but I’ve seen before when they say that they don’t have things available, but you go in store and they’re in there. So, it just felt kind of deceitful”* [Female, Kentucky SNAP recipient, age 37]. In the quantitative survey, 68% of participants reported that the “foods [they] want/need” are available when online grocery shopping, indicating that while the majority of people agreed with the statement there was still over a third of participants who felt neutral or disagreed with this at baseline, potentially having similar feelings as those expressed in the qualitative findings.

Another sub-theme related to challenges of online shopping was the quality of items received, specifically participants felt like the produce and meat products provided in their online orders varied in quality. Some participants reported that they preferred to choose their own products rather than rely on the professional shopper whom they felt simply selected the most convenient item, rather than the freshest or highest quality item. Despite these concerns, nearly three quarters of the quantitative sample reported feeling satisfied with the quality of fruits and vegetables they received when shopping online.

Finally, participants described a few areas of inconvenience related to online shopping. This came up in two primary ways: the first was not being able to get a preferred time to pick-up or have the online order delivered; the second was long wait times at the store for curbside pick orders to be brought to the car. One Kentucky SNAP recipient commented, *“They [the grocery store] definitely had a long wait time. . . I know one time, I pulled up and there was two cars maybe in the line with me and they had six rows. I was like, ‘Okay, this is going*

Table 2. Themes identified from semi-structured interviews with SNAP recipients on online grocery shopping (*n* = 26).

Theme	Sub-Theme	Representative Quote(s)
Challenges to online shopping	Substitutions & Stocking issues	<p>“They have an option where they’ll say, ‘Hey, we were out of this item, but here’s a replacement option. Do you accept or deny?’” [Female, Kentucky SNAP recipient, age 35]</p> <p>“I know you can choose substitutions and whatnot when you do the online shopping, but I’ve seen before when they say that they don’t have things available, but you go in store and they’re in there. So it just felt kind of deceitful.” [Female, Kentucky SNAP recipient, age 37]</p>
	Quality of items	<p>“The produce is kind of iffy. Sometimes you get good produce and sometimes, I guess it’s the shopper that’s doing it, whether they want to take the time to get you some good produce or no. They’re just like, “Oh, she wanted bananas. Here’s some black bananas.” [Female, Kentucky SNAP recipient, age 42]</p> <p>“As far as online shopping, I’m not really too much of a fan of it because I kind of like to pick out my own meats.” [Female, Maryland SNAP recipient, age 31]</p>
	Scheduling & pick up wait times	<p>“If I ordered or I wanted to order something today, I can place the order, but it wouldn’t be delivered to me until this time next week. That’s one of the main inconvenient things.” [Female, Maryland SNAP recipient, age 43]</p> <p>“They definitely had a long wait time... I know one time, I pulled up and there was two cars maybe in the line with me and they had six rows. I was like, ‘Okay, this is going to be pretty quick.’ I ended up waiting 15 to 20 minutes outside for them to come out. It didn’t really make sense.” [Female, Kentucky SNAP recipient, age 34]</p>
Benefits of online shopping	Convenience	<p>“The convenience factor was one thing, having groceries delivered, not having to deal with people, being able to do it on my own time.” [Female, Maryland SNAP recipient, age 34]</p>
	Time savings	<p>“It took less time because to me you weren’t in the store having to walk around all the aisles to get what you needed and then having to wait in line to check out yourself or for someone else to check you out... you didn’t necessarily have to wait in line if you did the online shopping.” [Female, Kentucky SNAP recipient, unreported age]</p> <p>“... when I grocery shop online, a lot of times when I go to place a new order, it’ll show me things that I’ve already purchased in the past. So I can do like a quick add. And I think that, that’s really cool, because that saves me time from actually typing in what I’m needing.” [Female, Kentucky SNAP recipient, age 35]</p>
	Fewer impulse purchases	<p>“I save money... Like if I’m in a store I’m going down every single aisle and I’m just picking up random stuff and I end up spending more money as opposed to being here, opening the refrigerator or the cabinets and being able to know what I need and what I don’t need. And it’s making me meal plan more and kind of stray away from just getting random stuff.” [Female, Kentucky SNAP recipient, age 35]</p>
	New Items	<p>“Actually, I bought a few new things. Looking through the app I seen things that just, I don’t know if I missed it in the store or just hadn’t never paid it no attention.” [Female, Kentucky SNAP recipient, age 41]</p>
Online shopping with EBT	SNAP EBT Payment	<p>“Actually, it’s pretty simple, because what you would do is, enter the information in, like your EBT card number, before you did any shopping. And they would automatically deduct it from your EBT card. And yeah, it was very easy.” [Female, Kentucky SNAP recipient, age 59]</p> <p>“You can order your stuff online, but you have to actually swipe it there at the store... there’s only like three markets that actually take EBT [as online payment] and the rest of them don’t but they take it in the store. That’s the only problem.” [Female, Maryland SNAP recipient, age 51]</p>

(Continued)

Table 2. (Continued).

Theme	Sub-Theme	Representative Quote(s)
Financial factors related to online shopping	Privacy	"Well, I mean, just not having to pull food stamp card out in front of everybody, which that doesn't bother me anyways. Everybody goes through hard times, but it's just private, being in your own house, and sitting there ordering what you want and don't have to see nobody, talk to nobody inside the store, so I guess privacy." [Female, Kentucky SNAP recipient, age 43]
	Cost savings	"It probably saves more money, you doing it online, because you just get what you need and then you don't have your children or your husband picking up stuff and throwing in the buggy." [Female, Kentucky SNAP recipient, age 38]
	Online shopping fees	"I actually have a membership now, premium. They have a premium membership with [delivery service] that's actually, I think it's \$9.99 a month and it takes away your delivery fees and the only thing you have to pay is a service fee, which is \$3 and 50 cents, so I said that was very convenient for me because I'm ordering online maybe two to three times a month." [Female, Maryland SNAP recipient, age 51]
		"Yeah, because if I needed just a couple things, I usually just run. Usually I do my bigger shopping online and then save the short trips for the few items for in person." [Female, Kentucky SNAP recipient, age 43]
		"Yes, I would not like to pay a fee. I don't know what the fee is or if the [store name] charges the fee. I think somebody was saying that they are not charging a fee because of COVID maybe I'm not quite sure if that's still a thing. But if they were charging a fee, definitely that would bear me off for sure." [Female, Kentucky SNAP recipient, age 37]
Future use of online shopping	Coupons & discounts	"If they're having sales, they do good with that in that retrospect, because they do have the 'Two for five' or 'Buy five, save five' or whatever type of sale they're having in the store. They do have that information available online as well." [Female, Kentucky SNAP recipient, age 34]
		"It was pretty easy [to use coupons] because you just clip it to your account and then when you ring out with that, you can see the coupons come off at the end." [Female, North Carolina SNAP recipient, age 32]
		"I don't know how much more I'll probably do the online shopping simply because if stuff's out of stock and I'm not given the option to do it, or if I have to go back in the store to exchange stuff, it defeats the purpose of that convenience." [Female, Kentucky SNAP recipient, age 34]
	"Maybe a couple of months out of the year, during the winter months when it's so cold, and I really don't want to get out, and go in, I might utilize it more then." [Female, Kentucky SNAP recipient, age 45]	
	"I've honestly adapted quite well to not having to get up and go into the store to actually deal with this. I prefer it because it's there, again, I don't have to carry all that stuff up the stairs. They're doing it all for me, so I'm quite happy with it." [Female, Maryland SNAP recipient, age 43]	

to be pretty quick.' I ended up waiting 15 to 20 minutes outside for them to come out. it didn't really make sense" [Female, Kentucky SNAP recipient, age 34]. In quantitative survey, about a quarter of participants reported inconvenient pick up or delivery times.

Benefits to online shopping

Participants reported several benefits to online shopping, which resulted in four sub-themes: 1) convenience, 2) time savings, 3) making fewer impulse purchases, and 4) finding new items.

Participants described several aspects of online shopping they found to be convenient, including being able to add things to their shopping cart throughout the day as they thought of what they needed. Shoppers who used delivery (versus curbside pick-up) also found not having to drive to the store or find transportation, as well as not having to carry groceries upstairs into the household, convenient. As one Maryland SNAP recipient shared, “*The convenience factor was one thing, having groceries delivered, not having to deal with people, being able to do it on my own time*” [Female, Maryland SNAP recipient, age 34]. Participants also found several aspects of online shopping to be time saving, including not having to physically walk through the whole store to find items. These results corroborate quantitative findings, where over 80% of the sample reported that online ordering saves time. Features found on online ordering platforms, such as “quick add” for items that were purchased previously, were also described as a strategy to save time.

Participants reported making fewer of what they conceptualized as impulse purchases online because they (or other household members, such as children) were not walking through the aisles and adding things to their cart as they would in store: “. . . *And it’s making me meal plan more and kind of stray away from just getting random stuff*” [Female, Kentucky SNAP recipient, age 35]. However, several participants also reported seeing new or different items online and purchasing them. It is important to note that participants liked seeing these new items, put thought into purchasing the items, and did not perceive these new or additional items as “impulse buys,” which are characterized in the literature as hasty or unplanned purchases (Chen, Kassas, and Gao 2021).

Online shopping with EBT

SNAP recipients described two unique aspects of online shopping with EBT, therefore there are two sub-themes in this area: 1) SNAP/EBT payment and 2) privacy. Participants felt like the process of using their EBT card online was very easy and did not have issues using it for purchasing groceries on the internet. A Kentucky SNAP recipient explained, “*Actually, [online shopping] it’s pretty simple, because what you would do is, enter the information in, like your EBT card number, before you did any shopping. And they would automatically deduct it from your EBT card. And yeah, it was very easy*” [Female, Kentucky SNAP recipient, age 59]. However, several participants noted that only a few retailers accepted full online EBT payments, meaning the full purchase/EBT transaction could not be made online. Many SNAP recipients described placing an EBT order online, then having to go inside the store to

have their SNAP/EBT card swiped upon arrival to pick up the curbside order (i.e., pay at pick-up), which shoppers found inconvenient. In addition, some participants reported issues with the in-store or curbside EBT point-of-sale systems (i.e., EBT terminal), for example stores having EBT terminals that were broken or not working making it difficult to complete their purchase. Similar to what was reported in the quantitative survey, participants also reported appreciating the anonymity of shopping online and not having to use their SNAP/EBT card in store, where they might experience stigma related to public benefit use: “. . . *not having to pull [the] food stamp card out in front of everybody, which that doesn't bother me anyways. Everybody goes through hard times, but it's just private, being in your own house, and sitting there ordering what you want and don't have to see nobody, talk to nobody inside the store, so I guess privacy*” [Female, Kentucky SNAP recipient, age 43].

Financial factors related to grocery shopping online

Three sub-themes were identified related to financial factors related to online shopping, including 1) perceived cost savings, 2) online shopping fees, and 3) coupons or discounts. Participants perceived that online shopping was a cost savings strategy, mainly related to purchasing fewer impulse items than they would in store: “*It probably saves more money, you doing it online, because you just get what you need and then you don't have your children or your husband picking up stuff and throwing in the buggy.*” [Female, Kentucky SNAP recipient, age 38]. Participants also did not perceive a difference in food pricing from in-store compared to online. Participants had mixed feelings about paying for online shopping fees. Some participants did not feel like the fees were worth the service received, where others were completely fine with the cost of the fees. These mixed feelings are consistent with the quantitative survey findings where slightly over half of participants reported being less likely to shop online due to delivery fees. Still, other participants had a mixed approach where they would place larger grocery orders online to reach a minimum purchasing amount that reduced or waived fees (e.g., \$35 at certain retailers) and running into the store for smaller grocery orders as needed. In terms of using coupons or discounts when online shopping, a SNAP recipient in North Carolina commented, “*It was pretty easy [to use coupons] because you just clip it to your account and then when you ring out with that, you can see the coupons come off at the end*” [Female, North Carolina SNAP recipient, age 32].

Future of grocery shopping online

Participants reported mixed feelings about continuing to grocery shop online in the future. Some participants felt like the challenges of online grocery shopping outweighed the benefits, thus they planned on shopping in-store in the future. Others were happy with their online shopping experience and

the conveniences it provided, thus planned to purchase most groceries online. Interestingly, several participants suggested that they would use a hybrid approach shopping both online and in-store in the future. This hybrid approach could be temporary/seasonal with participants reporting that they would shop online if they were sick or during the winter when it is too cold to go outside: “*Maybe a couple of months out of the year, during the winter months when it’s so cold, and I really don’t want to get out, and go in, I might utilize it more then*” [Female, Kentucky SNAP recipient, age 45]. The hybrid approach could also be related to the type of grocery order characteristics, with participants reporting they would place large grocery orders online and “run in” for smaller grocery orders. In addition, some participants reported that they would place an online order for “staple food items,” then going into the store so they could self-select perishable goods like produce or meat.

Discussion

This study expands the limited literature on using SNAP EBT for online grocery shopping by examining differences in online shopping perceptions between SNAP and non-SNAP recipients, as well as doing an in-depth exploration of SNAP recipients’ perceptions and experiences with online shopping. This study is novel as it is only the second study to focus on SNAP recipients that have experience using their SNAP EBT online (Trude et al. 2022).

The previous study by Trude et al. (2022), found that shoppers in households with low incomes who had previous experience with online grocery shopping had more positive attitudes about online grocery shopping than those who had not grocery shopped online (Trude et al. 2022). Similarly, in this study, SNAP recipients with online shopping experience identified several benefits of grocery shopping online and reported few barriers to online shopping that were specifically related to using their SNAP benefits. The main issue related to online SNAP EBT use was that at certain stores, SNAP recipients were not able to fully complete an online transaction using their SNAP EBT card, but rather had to swipe their card at the store, and they would have found it preferable to complete the transaction fully online. This preference for fully online transactions is consistent with another pilot study testing the use of federal food program benefits online (Zimmer, McElrone, and Anderson Steeves 2021).

While fully online SNAP EBT transactions are permitted under the SNAP OPP, grocery stores may need technology support to make sure that SNAP recipients receive an equitable shopping experience compared to shoppers using other forms of payment online. These findings are notable because a recent review paper that takes an equity-oriented lens to online grocery shopping among populations with low incomes highlights the importance of

the ability to use federal food program benefits, including SNAP benefits, for online grocery shopping as an enabling factor of equitable access to healthy foods (Trude et al. 2024).

Providing shoppers with limited incomes more control over food selection and the overall online shopping experience was another enabling factor identified (Trude et al. 2024) in the equity-focused review of online grocery shopping (Trude et al. 2024). This is consistent with the results of this study, as this study found that many of the barriers to online shopping reported by SNAP recipients (substitutions, concerns about the quality of foods provided, and scheduling issues/wait times associated with receiving online orders) are all things that the shopper has reduced control over when shopping online versus in-store. Several studies have found that SNAP recipients have concerns about the quality of the foods, particularly produce and meats, they receive when shopping online (Martinez et al. 2018; Trude et al. 2022). Interestingly, in this study, the quantitative data found that most SNAP and non-SNAP recipients reported that they felt like they could get high quality produce online, with over 80% of SNAP recipients and over 70% of non-SNAP recipients reporting they are satisfied with the quality of fruits and vegetables they receive when shopping online.

This study and the other study that examined perceptions of SNAP recipients with online shopping experience (Trude et al. 2022) both found that participants reported concerns about unwanted product substitutions when shopping online. Understanding these perceived issues related to control over the shopping experience and preferences of shoppers is important as it allows retailers to address shoppers' concerns. For example, stores could put in mechanisms in online shopping systems to allow participants to describe/annotate the personal preferences they have for fruits and vegetables (such as the level of ripeness) or to easily accept/decline substitutions to the online order.

Fees associated with placing an online order or delivery services have been cited in the literature as a deterrent to equitable access to food using online grocery services (Trude et al. 2024). In this study, participants in both data collection strands perceived online grocery shopping to be affordable (notwithstanding associated online shopping fees, which are described further below). SNAP recipients in the qualitative sample reported no perceived price differences in-store versus online and feeling like coupons/discounts were easy to use online.

Participants, however, had mixed feelings about online shopping fees, which was reflected in both the quantitative and qualitative components. For example, the majority of SNAP and non-SNAP recipients reported delivery fees as being a deterrent from online grocery shopping, which is consistent with other studies among federal food program users (Trude et al. 2022, 2024; Zimmer, McElrone, and Anderson Steeves 2021). In this study and a previous study (Trude et al. 2022), SNAP recipients who shopped online reported shopping more strategically, such as making bigger purchases or using

curbside pick-up over delivery to avoid purchasing and delivery fees. Policy or retailer-based efforts to eliminate fees associated with online grocery shopping and delivery would make online shopping more enticing to SNAP shoppers and should be considered.

The strength of this study is that it uses a rigorous mixed methods research design with shoppers that do and do not use federal nutrition program benefits, across multiple states, with both rural and urban populations. The findings of the study were reinforced through both quantitative and qualitative data collection strands, thus enhancing the confirmability of the results (Lincoln and Guba 1990). Like all studies, this study has limitations. The first limitation was that the SNAP status of the quantitative sample was self-reported, and there may have been some individuals who were eligible for SNAP, but not participating in the non-SNAP sample. Secondly, there is possible selection bias exists toward those who had access to and were comfortable with the Internet, although recent research states that most of the US population does have internet access (Pew Research Center 2021). While the study sample included residents from three states, approximately half of the qualitative sample was from Kentucky ($n = 14$), and fewer participants were from Maryland ($n = 9$) and North Carolina ($n = 3$). Therefore, the qualitative results should be interpreted appropriately. Larger studies with more diverse populations, including populations with various cultural backgrounds, could be an important next step for this study, as groups may have cultural grocery shopping preferences.

Online grocery shopping has the potential for growth among SNAP recipients (Jensen et al. 2021) and may have unique benefits for SNAP recipients such as increased physical access to food overall and to fruits and vegetables (Gustafson et al. 2022) and increased opportunity use SNAP EBT benefits in a way that reduces stigma, promoting equitable shopping opportunities compared to shopping trends in the general population (Trude et al. 2024).

This study provides important information that can inform future policy and programmatic activities related to SNAP by comparing perceptions of SNAP and non-SNAP recipients related to online grocery shopping and capturing feedback and shopping behaviors from SNAP recipients who have been actively online grocery shopping. These findings can be used by retailers, public health professionals, and policy makers to enhance the uptake of online shopping with SNAP EBT and make it easier and more appealing for SNAP recipients to shop online.

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Data availability statement

Data are available through the corresponding author. Data are not publicly available due to confidentiality.

References

- Braun, V., and V. Clarke. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3 (2):77–101. doi:10.1191/1478088706qp063oa.
- Braun, V., and V. Clarke. 2023. Toward good practice in thematic analysis: Avoiding common problems and be(com)ing a knowing researcher. *International Journal of Transgender Health* 24 (1):1–6. doi:10.1080/26895269.2022.2129597.
- Chen, X., B. Kassas, and Z. Gao. 2021. Impulsive purchasing in grocery shopping: Do the shopping companions matter? *Journal Retailing and Consumer Sciences* 60:102495. doi:10.1016/j.jretconser.2021.102495.
- Coffino, J. A., T. Udo, and J. M. Holmes. 2020. Nudging while online grocery shopping: A randomized feasibility trial to enhance nutrition in adults with food security. *Appetite* 152 (1):104714. doi:10.1016/j.appet.2020.104714.
- Cohen, N., K. Tomaino Fraser, C. Arnow, M. Mulcahy, and C. Hille. 2020. Online grocery shopping by NYC public housing residents using supplemental nutrition assistance program (SNAP) benefits: A service ecosystems perspective. *Sustainability* 12 (11):4694. doi:10.3390/su12114694.
- Creswell, J., and V. Plano Clark. 2011. *Designing and conducting mixed methods research*. 2nd ed. Thousand Oaks: Sage.
- DeCuir-Gunby, J. T., and P. A. Schutz. 2017. *Mixed methods designs: Frameworks for organizing your research methods. Developing a mixed methods proposal: A practical guide for beginning researchers*. 1st ed. Thousand Oaks: Sage.

- Duffy, E. W., A. Lo, M. G. Hall, L. Smith Taillie, and S. W. Ng. 2022. Prevalence and demographic correlates of online grocery shopping: Results from a nationally representative survey during the COVID-19 pandemic. *Public Health Nutrition* 25 (11):3079–85.
- Foster, I. S., S. Y. Liu, C. T. Hoffs, C. LeBoa, A. S. Chen, and P. Rummo. 2022. Disparities in SNAP online grocery delivery and implementation: Lessons learned from California during the 2020-21 COVID pandemic. *Health & Place* 76:102811. doi:10.1016/j.healthplace.2022.102811.
- Giordano, L., D. W. Rothwell, S. Grutzmacher, and M. Edwards. 2022. Understanding SNAP use patterns among older adults. *Applied Economic Perspectives and Policy* 44 (2):609–34. doi:10.1002/aep.13228.
- Glaser, B. G., and A. L. Strauss. 2017. *The discovery of grounded theory: Strategies for qualitative research*, 1st ed. New York: Routledge.
- Granheim, S. I., A. L. Løvhaug, L. Terragni, L. E. Torheim, and M. Thurston. 2022. Mapping the digital food environment: A systematic scoping review. *Obesity Reviews* 23 (1):e13356.
- Gupta, S., E. Mayers, S. Schwieling, M. Westrick, H. Schier, A. R. Sharn, C. Pannell, and C. Gunther. 2023. Online grocery shopping and the supplemental nutrition assistance program (SNAP) electronic benefit transfer card (EBT): Perceptions of head start caregivers. *Ecology of Food and Nutrition* 62 (1–2):75–87. doi:10.1080/03670244.2023.2187383.
- Gustafson, A., R. Gillespie, E. DeWitt, B. Cox, B. Dunaway, L. Haynes-Maslow, E. A. Steeves, and A. C. Trude. 2022. Online Pilot grocery intervention among rural and urban residents aimed to improve purchasing habits. *International Journal of Environmental Research & Public Health* 19 (2):871. doi:10.3390/ijerph19020871.
- Jensen, K. L., J. Yenerall, X. Chen, and T. Edward Yu. 2021. US consumers' online shopping behaviors and intentions during and after the COVID-19 pandemic. *Journal of Agricultural and Applied Economics* 53 (3):416–34. doi:10.1017/aae.2021.15.
- Jilcott Pitts, S. B., S. W. Ng, J. L. Blitstein, A. Gustafson, C. J. Kelley, S. Pandya, and H. Weismiller. 2020. Perceived advantages and disadvantages of online grocery shopping among special supplemental nutrition program for women, infants, and children (WIC) participants in Eastern North Carolina. *Current Developments in Nutrition* 4 (5):nzaa076. doi:10.1093/cdn/nzaa076.
- Jones, J. W. 2021. Online supplemental nutrition assistance program (SNAP) purchasing grew substantially in 2020. *Amber waves: The economics of food, farming, natural resources, and Rural America*. <https://www.ers.usda.gov/amber-waves/2021/july/online-supplemental-nutrition-assistance-program-snap-purchasing-grew-substantially-in-2020/#:~:text=This%20value%20grew%20especially%20rapidly,times%20the%20value%20in%20February> (accessed November 27, 2023).
- Lincoln, Y. S., and E. G. Guba. 1990. Judging the quality of case study reports. *International Journal of Qualitative Studies in Education* 3 (1):53–59. doi:10.1080/0951839900030105.
- Malterud, K., V. D. Siersma, and A. D. Guassora. 2016. Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research* 26 (13):1753–60. doi:10.1177/1049732315617444.
- Martinez, O., B. Tagliaferro, N. Rodriguez, J. Athens, C. Abrams, and B. Elbel. 2018. EBT payment for online grocery orders: A mixed-methods study to understand its uptake among SNAP recipients and the barriers to and motivators for its use. *Journal of Nutrition Education and Behavior* 50 (4):396–402. e391. doi:10.1016/j.jneb.2017.10.003.
- McGuirt, J., S. B. Jilcott Pitts, J. D. Labban, E. T. Anderson Steeves, L. Haynes-Maslow, S. Henry, and A. Gustafson. 2022. Evidence of geospatial and socioeconomic disparities in access to online grocery shopping for fresh and frozen produce in North Carolina. *Journal of the Academy of Nutrition and Dietetics* 122 (11):2106–14. doi:10.1016/j.jand.2022.05.008.

- Pew Research Center. 2021. Internet/Broadband fact sheet. Accessed November 27, 2023. <https://www.pewresearch.org/internet/fact-sheet/internet-broadband/?menuItem=480dace1-fd73-4f03-ad88-eae66e1f4217>.
- Pitts, S. B. J., S. W. Ng, J. L. Blitstein, A. Gustafson, and M. Niculescu. 2018. Online grocery shopping: Promise and pitfalls for healthier food and beverage purchases. *Public Health Nutrition* 21 (18):3360–76. doi:10.1017/S1368980018002409.
- Polselli, A., C. Hoffs, I. Foster, C. de Nocker, and C. Leboa. 2021. Understanding nationwide uptake: An analysis of SNAP online purchasing program. Thesis., University of San Francisco.
- Rogus, S., J. F. Guthrie, M. Niculescu, and L. Mancino. 2020. Online grocery shopping knowledge, attitudes, and behaviors among SNAP participants. *Journal of Nutrition Education and Behavior* 52 (5):539–45. doi:10.1016/j.jneb.2019.11.015.
- Rummo, P. E., C. A. Roberto, L. E. Thorpe, A. B. Troxel, and B. Elbel. 2022. Age-specific differences in online grocery shopping behaviors and attitudes among adults with low income in the United States in 2021. *Nutrients* 14 (20):4427. doi:10.3390/nu14204427.
- Trude, A. C., S. H. Ali, C. M. Lowery, G. M. Vedovato, J. M. Lloyd-Montgomery, E. R. Hager, and M. M. Black. 2022. A click too far from fresh foods: A mixed methods comparison of online and in-store grocery behaviors among low-income households. *Appetite* 175:106038. doi:10.1016/j.appet.2022.106038.
- Trude, A. C. B., N. B. Bunzl, Z. N. Rehman, B. Elbel, S. Lau, L. A. Talal, and B. C. Weitzman. 2024. “I don’t want an app to do the work for me”: A qualitative study on the perception of online grocery shopping from small food retailers. *Journal of the Academy of Nutrition and Dietetics* In press (7):804–22. doi:10.1016/j.jand.2023.12.005.
- Trude, A., J. Lloyd-Montgomery, S. Ali, C. Lowery, E. Hager, and M. M. Black. 2021. Online grocery shopping patterns and barriers among families eligible for SNAP: A mixed-methods study. *Current Developments in Nutrition* 5 (Supplement 2):567–567. doi:10.1093/cdn/nzab043_019.
- USDA. 2018. Supplemental Nutrition Assistance Program. Accessed February 26, 2024. https://www.usda.gov/sites/default/files/documents/snap_fact_sheet.pdf.
- USDA. 2020. SNAP online purchasing to cover 90% of households [press release]. Article 0268.20. Accessed November 27, 2023. <https://www.usda.gov/media/press-releases/2020/05/20/snap-online-purchasing-cover-90-households>.
- USDA. 2022. SNAP online purchasing Pilot. Accessed November 27, 2023. <https://www.fns.usda.gov/snap/online-purchasing-pilot>.
- USDA. 2023. What can SNAP buy? Accessed February 20, 2024. <https://www.fns.usda.gov/snap/eligible-food-items>.
- USDA. 2024. SNAP data tables. Accessed February 20, 2024. <https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap>.
- USDA Food and Nutrition Service. 2016. Electronic benefits transfer online purchasing Pilot request for volunteers. Article 0584-0606. Accessed November 27, 2023. <https://fns-prod.azureedge.us/sites/default/files/resource-files/onlinepurchasing-rfv.pdf>.
- Zatz, L. Y., A. J. Moran, R. L. Franckle, J. P. Block, T. Hou, D. Blue, J. C. Greene, S. Gortmaker, S. N. Bleich, M. Polacsek, et al. 2021. Comparing online and in-store grocery purchases. *Journal of Nutrition Education and Behavior* 53 (6):471–79. doi:10.1016/j.jneb.2021.03.001.
- Zimmer, M., M. McElrone, and E. T. Anderson Steeves. 2021. Feasibility and acceptability of a “click & collect” WIC online ordering pilot. *Journal of the American Academy of Nutrition and Dietetics* 121 (12):2464–74. doi:10.1016/j.jand.2021.05.015.