ABSTRACT
Objective: To assess the barriers and facilitators to online food purchasing through a meal kit and grocery shopping website titled NY SNAP Express among Supplemental Nutrition Assistance Program (SNAP) beneficiaries.
Methods: A purposive sample of SNAP-eligible adults residing in New York State participated in interviews guided by the Capabilities, Opportunities, Motivations, and Behaviors Model.
Results: Barriers to online food purchasing among participants (n = 32) include physiological and health conditions, the weight of food, technology, language, the price of foods, transportation challenges, the stigma associated with SNAP, and concerns regarding the quantity and quality of meal kits. Facilitators include health and nutrition improvements, knowledge and skills, saving money, culturally relevant meals, increased efficiency in food purchases and preparation, and customization.
Conclusions and Implications: Online platforms such as NY SNAP Express have the potential to increase nutritious food access and resources among SNAP recipients; however, improvements are necessary to meet the needs of its audience.
Key Words: online grocery shopping, Supplemental Nutrition Assistance Program, SNAP-Ed, electronic benefits transfer, USDA

INTRODUCTION
In the US, food insecurity, or the lack of or uncertain access to food, remains a critical issue. Compared with the national average, the prevalence of food insecurity is significantly higher among households headed by single women with children and by Black, non-Hispanic, or Hispanic/Latino/a/x individuals. Those who are economically disadvantaged, such as those with low income or who experience unemployment, have disabilities, or live near built food environments with limited availability and access to food, are at increased risk. Extensive research suggests consistent associations between food insecurity and lower diet quality, as well as a higher risk of developing diet-related chronic conditions (ie, obesity, diabetes) in adults. Furthermore, a recent meta-analysis identified a link between food insecurity and the risk of poor mental health, such as depression and stress. In addition, the coronavirus disease 2019 (COVID-19) pandemic highlighted disparities in sufficient food access and drastically altered how and where individuals, especially those who receive food assistance, such as the Supplemental Nutrition Assistance Program (SNAP), may acquire food. In 2022, approximately 12% of US households receive SNAP, and the prevalence is higher in New York (NY) State (14%).

A recent strategy to maximize food access among SNAP-eligible individuals who experience food insecurity is through the use of online food purchasing platforms. Before 2014, SNAP benefits in the form of electronic benefit transfer (EBT) were only redeemed at brick-and-mortar stores. Then, in the 2014 Farm Bill, the US Department of Agriculture (USDA) initiated the Online Purchasing Pilot, which allowed participating food retailers in 8 states to accept SNAP benefits for online food purchases. In 2019, the pilot officially launched in 1 state, and in 2020, with the onset of the COVID-19 pandemic, it quickly expanded to 47 states. In 2022, approximately 3 million households...
receiving SNAP shopped online.10 Redemption of SNAP benefits online could provide EBT holders with time and financial flexibility to purchase groceries online without having to go in-store. This has the potential to address barriers associated with in-store food purchasing among individuals with low income who may be eligible for SNAP, such as limitations with transportation.

Several studies have qualitatively examined food assistance recipients’ perceptions of purchasing foods online. A barrier to purchasing foods online includes concerns over the quality of purchased food items, especially if they are perishable.11−14 In a study that conducted focus groups in New Mexico, researchers identified that SNAP recipients valued the experience of purchasing foods in person; they were willing to purchase foods online if additional services were provided, such as recipe suggestions and budgeting tips, along with the acceptance of SNAP benefits.14 In addition to the incorporation of supportive services and the ability for SNAP recipients to use their EBT card online, ease and convenience serve as major facilitators for this population to purchase foods online.10−15

These studies have mainly accounted for perspectives from SNAP participants but not eligible nonparticipants. Furthermore, there is a dearth of research on the perspectives of a website that allows individuals eligible for or currently receiving SNAP to purchase groceries in addition to meal kits. Only 3 studies published in recent years have evaluated and tested the feasibility of meal kits.16−18 Overall, these studies reported increased consumption of foods such as fruits and vegetables, and participants found value in the nutrition education resources provided, such as recipes and cooking handouts. In these interventions, however, participants were not given a choice to select the meal kit they would have for the week.

In comparison, NY SNAP Express offers a range of 1−12 recipes grouped into specific “kits” that reflect a particular theme established by nutrition educators. These meal kits are housed on a website for participants to select and purchase. Afterward, individuals are directed to acquire ingredients from a participating retailer either through pick-up or delivery in addition to other groceries they may need. The website also offers participants recipes on how to prepare each meal, additional cooking tips, and, most importantly, allows participants to purchase meal kits using their SNAP benefits. A formative evaluation of the NY SNAP Express website is needed to address the gap in knowledge on online meal kits and grocery platforms.

The purpose of this formative assessment using a basic descriptive qualitative approach18 was to explore the barriers and facilitators to online food purchasing through NY SNAP Express among income-eligible SNAP participants in NY before the website launch for user testing.

METHODS

New York SNAP Express

Nutritious and affordable meal kits, developed by NY SNAP-Ed nutritionists and educators, are available through NY SNAP Express, a new food purchasing website. On the website, individuals can choose meal kit recipes out of a selection bank of 200 options. After choosing a meal kit, its respective ingredients will automatically populate on the website of a partner store chain, in which they are purchased using any form of payment, including EBT, for pick-up or delivery. Participants are welcome to add and purchase other groceries through the retailer’s website. The NY SNAP Express website also provides recipes, nutrition information, and tips to save time and money.

Participants and Recruitment

This study protocol and its materials underwent an expedited review and received approval from the Cornell Institutional Review Board for Human Participants. The study used convenience and snowball sampling to initially recruit participants in March, 2021 and again in July, 2021. We developed recruitment flyers in English and Spanish, which were sent to cooperative extension partners in both recruitment periods for distribution. In the initial recruitment period, we sent flyers to interested community organizations to post on their social media pages. We informed prospective participants to reach out via email to the research team, indicating their interest. Most of the participants in the initial recruitment period reflected perspectives from rural areas of upstate and central NY, which warranted another recruitment period. In the second recruitment period, additional flyers in Chinese were made and mainly took place downstream to account for perspectives from adults of minoritized backgrounds (Spanish and Chinese) who reside in urban areas.

An online screening questionnaire was used to determine eligibility: (1) aged > 18 years, (2) resident of NY State, and (3) meet the income criteria to qualify for food assistance benefits.

Data Collection Procedures

We acquired informed consent verbally before data collection. Trained research team members collected data through hour-long interviews via phone or video chat in English, Spanish, and Chinese (Mandarin and Cantonese). To facilitate the interview, we relied on a semistructured interview guide in the participant’s respective language. At the start of the study, NY SNAP Express was still under development and not publicly accessible. Because NY SNAP Express was new, we provided a brief, standardized description of the website and its purpose to each study participant, followed by interview questions that were developed using components of the Capabilities, Opportunities, and Motivations of Behavior (COM-B) Model.19 The COM-B model illustrates that engagement in a particular behavior (ie, online food purchasing) is determined by the existence and interaction of 3 features: an individual’s physical and psychological capability, physical and social opportunity, and reflective and automatic motivations. Descriptions of features and example interview questions are provided in the Supplementary Table. Interviewers were instructed to debrief with one another regarding
challenges faced during interviews. We modified existing questions accordingly if study participants faced difficulty interpreting or answering questions. Multiple interviewers allowed for triangulation and established the confirmability and credibility of the data collection process. After each interview, we asked participants to fill out a brief online demographic questionnaire through Qualtrics. We asked questions related to age, sex, race, Hispanic identity, education level, income, housing status, and number of children living in the household, among others. The response options for sex included male, female, nonbinary/third gender, and prefer not to say. For race, we provided 14 response options, which included American Indian or Alaska Native, Black or African American, African, Caribbean or West Indian, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian (please specify), White, Other Race (please specify), Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander (please specify), Biracial, Multiracial. We also asked participants if they were of Hispanic, Latino/a, or Spanish origin and offered the following options: Mexican, Mexican American, Chicano/a, Puerto Rican, Cuban, Dominican, Unknown, Other Hispanic, Latino/a, or Spanish origin, and Not of Hispanic, Latino/a, or Spanish origin. Once the questionnaire was complete, we sent the $20 remuneration, a copy of the consent form, and a copy of the recruitment flyers to share with others in their network who were potentially eligible. On average, interviews lasted between 45 minutes to 1 hour. Data collection continued until data saturation was achieved. For this study, saturation was defined as the repetition of ideas and perspectives in interviews.

Data Analysis

GMR Transcription developed transcripts, which we analyzed using a combination of inductive and deductive content analysis. To establish the dependability of our analysis, we applied the strategy of triangulation in which at least 2 coders independently analyzed each transcript. First, the research team, consisting of the principal investigator and graduate and undergraduate students, coded the first set of interviews (n = 17) from the initial recruitment period (March through May, 2022) line-by-line in Word using the comment feature. Through data displays, a graduate and undergraduate team member identified the most prevalent and significant codes from each measure to compile a codebook for the selective coding stage. Using the codebook, 3 undergraduate students led by a graduate student researcher recoded the initial set and coded the second set of interviews (n = 15) from the next recruitment phase using NVivo (version 12, QSR International). Through this step, we were able to develop focused codes and refine categories. We extracted and organized themes according to the COM-B model.

Furthermore, each coder reflected and wrote analytic memos as the analysis progressed, and the team met often to debrief the findings. Memos and frequent discussions allowed the team to reflect on personal biases, resolve assumptions and inconsistencies with codes and themes, and build the confirmability and credibility of the analysis. Demographic characteristics were also summarized.

RESULTS

Demographics

Participants (n = 32) were mostly female (71.9%), and the mean age was 48.8 years. A quarter (25.0%) of the participants were Chinese, another quarter were Black or Biracial/Multiracial, and approximately half of the participants (53.1%) were White. The level of education varied greatly with several participants. In addition, half of the participants (50.0%) reported they were out of work for > 1 year, and most (62.5%) reported a yearly income between $0 and $9,999. The Table offers details on demographic characteristics.

A summary of themes is described in the Figure. First, we will highlight themes related to the barriers to online food purchasing through NY SNAP Express for each feature of the COM-B model in the following order: capabilities (physical and psychological), opportunities (physical and social), and motivations (reflective and automatic). Using the same order, we will then describe the facilitators of online food purchasing through NY SNAP Express.

Barriers Related to Physical Capabilities Were Physiological and Health Conditions and the Weight of Food

Physiological and health conditions. Participants referenced their current health condition, aging, and subsequent physical limitations that make it difficult for them to prospectively purchase food online through NY SNAP Express without assistance from another person. This concern was especially the case for older adult participants, who expressed needing support to use the website and to pick-up groceries.

Oh, well, if somebody was working with me, yeah. That would be fine. Otherwise, by myself, I don’t think I’d be able to do it.

I used to do my own shopping and of course I can’t do that anymore. So, that’s a disadvantage to me... I do very little. I just make a list and give it to my daughter and she picks it up, at the store.

Weight of food. Some participants highlight how the amount and weight of food they purchase online for pick-up can limit their food shopping experience. This was particularly the case for people who do not have a personal vehicle to transport groceries home and who are mindful of the distance between the store and their home.

...there was a time when I had no car. Then, uh, shopping becomes like infinitely harder, to take public transportation, you know, to be limited by if your local buses will only allow a certain number of, uh,—you to carry on a certain number of bags, or if they have a limited, um, schedule, you know, and you have to, uh, either schedule as to your time, and, you
know, the difficulty of carrying or transporting. I mean, I would like to participate in the program, yes, but I would also like to see—depending on the places that are near my house. Because if I have to go pick something up and I am getting vegetables, fruits, things that are usually heavy, and I don’t have a car to drive, then I have to use public transportation. So, I would also be interested in learning the distance between the place handing out the products and where I live.

**Barriers Related to Psychological Capabilities Were Technology and Language**

Technology and language. As a website, NY SNAP Express is tailored to those with access and abilities to navigate a web-browsing device. This is a significant barrier for participants who lack access to the internet or who have limited technological literacy.

*If it’s online, I think it’s going to be a challenge to learn... I don’t know a lot about the internet. Once I’m taught, or they instruct me... I could learn it.*

Technology barriers were especially noted among participants with limited English language proficiency.
I don’t know English, that’s why I don’t know how to use the internet at all. I don’t want to use this kind of thing... It’s too difficult.

I don’t know how to buy online as an elderly. I don’t know how to surf the Internet and I can’t read English. If it is in Chinese, I would like to learn.

The present version of NY SNAP Express would inadvertently pose challenges for participants with technological and language limitations if not provided with additional support.

If I knew how to go online, I would. If I go online, I’ll use it. It’s really more convenient to do things online.

Barriers Related to Physical Opportunities Were the Expense of Food and the Lack of a Reliable Mode of Transportation

Expense of foods. Participants were concerned with the cost of purchasing food online. Mainly, participants discussed the additional and minimum fees associated with online food purchasing, such as pick-up or delivery, which is challenging for individuals to pay, especially on a limited budget.

If your grocery budget is already super tight, you can’t pay the delivery fee, or—even [store redacted], they say, ‘our grocery pick up’s free.’ But they add like 10 percent onto every item. If you’re on a strict grocery budget, you can’t afford to pay 10 percent over... That is a big barrier... Like we never get delivery because I’m like okay, if you get delivery, you have an extra $6.00 fee.

I would like to know if there’s—if you have in mind what the minimum consumption value will be because that’s something that can either, uh, motivate us, or it can discourage us to—to want to order online. Because the minimum is always a very high amount... for them to actually do the delivery.

Some participants noted that to alleviate the cost of food for these services, they would have to rely on additional resources such as SNAP benefits.

Well, for me, from the start, it seems like a good idea, but the prices, for example, if they were economical—where you can use food stamps and all of that. That also seems like a good idea. I’ll say it would be more motivating to me if they were low prices.

Both the cost of groceries and additional fees inhibit SNAP-eligible adults from purchasing food online.

Lacking a reliable mode of transportation. This was a frequently noted barrier for online pick-up and in-person grocery shopping. Most participants relied on others within their social network to access groceries.

I think it’d be better because it would give me more opportunity because right now I have to wait for a ride or somebody to bring me...
to the store. We don’t have cab fares because it’s $10 for a cab. So, if I don’t have money for a cab, I have to wait until somebody can bring me.

This barrier was noticeable among residents of rural areas who may have access to other modes of transportation yet still face challenges accessing food overall.

I think that comes back to the whole thing that I was talking about with the rural communities. We’re a little limited. I believe that the farmer market would be a good option to help people eat healthier. But again, it’s only in [adjacent city]. It’s harder to find transportation to there. I believe there is some buses or things like that that run to there, but honestly, with my medical condition, I couldn’t do a—it only takes 20 minutes to get from here to [adjacent city]. But with all the stops that the buses makes, I’ve heard that it takes an hour sometimes.

Barriers Related to Social Opportunities Include Stigma Regarding Participation

Stigma regarding participation. A major barrier to online food purchasing through the program reflecting participants’ social opportunities was a stigma. Because the website is affiliated with SNAP and food assistance, some participants indicated concern that purchasing food through the program may lead to negative perceptions from others. One participant’s concern stemmed from an encounter she had when she was considering applying for SNAP benefits, whereas another discussed how the program’s name could discourage online food purchasing through the website.

We just didn’t make anything. And that’s, unfortunately, how it is a lot of the time... you don’t make enough money. But we would be like, ‘Oh, we can’t apply for SNAP ‘cause our parents said only poor people do that.’ And we would be trashy if we did that, and I know that there are so many families that we’ve worked with over the years that if there’s a stigma in the community, they would rather basically [let] their kids go hungry... than say, ‘Hey, we do need help of getting that extra food bag,’ because they don’t want to look weird.

Maybe getting discouraged by the name—by your family members or your friends who may discourage as taking part in the program.

Barriers Related to Reflective/Automatic Motivations Were the Quantity and Quality of Meal Kits, Food Preferences, and General Ambivalence and Distrust

Quantity and quality of meal kits. One barrier related to participants’ motivation is the quantity and quality of meal kit items. Participants, especially those with children, were particularly concerned about the sufficiency of meal kits: whether or not they would provide an adequate amount of food for those in their household.

They’d just be nervous about how it would work out if meals would be big enough for two adults and seven kids. Because of our family size...they’d just want to make sure that we have enough to eat.

Several participants questioned the quality and freshness of ingredients and how it is presented and packaged especially for delivery.

I’d wanna know if, like, the produce is fresh, the meat’s fresh, you know, everything’s fresh, just so I know it’s gonna be better for my family.

...we’ve all got boxes that are squished, and if they threw some of the fruit or tomatoes, I mean, if those are thrown around, those are not going to be any good. Or if there’s not enough ice to keep the meat cold, it’s going to go bad.

Food preference. Buying food online in the form of meal kits or groceries does not seem to appeal to individuals who value the sensory experience of food purchasing at a physical location in which they can guarantee that foods match their preferences. One parent emphasized the importance of buying foods they can use.

There’s five of us, and I wouldn’t wanna buy things that...we—not all of us would eat.

To most, there is a level of risk associated with using a website in which they would have to rely on a shopper to select their food items.

There’s an intermediate level of trust... I like buying things myself because I can choose the things that I like. Tomatoes that are very red, medium-sized oranges, small potatoes, large onions. I mean, it’s a matter of taste, right? And if I order online one kilogram of onions, two kilograms of tomatoes, and if they give me green tomatoes or how I don’t want them, so that has a lot to do with it. And I don’t know what they could do there because it’s difficult for the person making the purchase to know about the taste of each person.

This risk explains why most wanted to personally choose their groceries, specifically perishable foods.

If I want to buy fruits and vegetables especially, I want to see them, smell them, touch them, you know, see, pick out the ones that I feel are ripe or, you know, not—I don’t wanna put something on a list and wind up with, you know—or, uh, say an unripe melon, as an example. I don’t want somebody else making those selections for me... but that’s, that’s in general.

Going to a physical food outlet enables SNAP-eligible adults also to apply strategies that they learned to make their food last.

Well, I don’t like to buy things online like that. I would much rather go myself and pick out my meat that I want because I portion it out for the month and stuff.
General ambivalence and distrust. Furthermore, websites like NY SNAP Express did not appeal to some participants. A few discussed their hesitation to participate because of the risk of sharing private information online, such as their EBT card number.

I don’t want to shop online. To be honest with you, I would just rather go in and use my food card myself and not give my numbers to anyone else because it’s a very untrusting world out there now. You know what I mean? So, I would just rather do it myself.

Internally, SNAP-eligible adults may lack motivation to purchase food online through this or similar programs simply because it poses a risk.

Facilitators Related to Physical Capabilities Include Perceived Health and Nutrition Benefit

Perceived health and nutrition benefits. Many adults underscore the desire to purchase food through the program if they believe it will improve their own or their family’s health and nutrition. Parents, in particular, prefer healthy meals that will enhance their children’s nutritional intake and perception of healthy food.

It’s compatible. If it’s going to be healthy meals, then I’m all for it because I want the kids to be eating healthier and show them that eating healthy foods aren’t as bad as they think they are. My kids think that healthy foods are kind of like monsters and they try to kill you. They’re like, ‘Oh, this is yucky. I don’t want to eat this. You’re trying to poison me,’ and we’re like, ‘No, this just is healthy for you,’ but they think that we’re trying to poison them.

Facilitators Related to Psychological Capabilities Include Knowledge and Skills

Knowledge and skills. SNAP-eligible adults are motivated to purchase food online through programs such as NY SNAP Express if it can expand their knowledge and skills and provide them with recipes and additional resources to prepare nutritious foods. One participant describes that online food purchasing through the website would come with the additional benefit of learning about a new cooking method or food item:

I would totally be on board with that as long as they offered something that I was interested in, as far as things that I eat and stuff. I’m definitely more for ordering it, not having to go out and shop, and be exposed to more sicknesses and things like that. And being in a SNAP program, I would assume that the cost is low and that it is healthy food.

Despite initial apprehensions about the costs associated with the program, many SNAP-eligible adults indicated their interest in purchasing food online if the meal kits and groceries were economical. For example, if costs of meal kits were too high, participants were hesitant to use the website and would rather choose alternative food outlets.

And that’s where the price will define whether the products you offer are good for me or not. Because if they’re [the prices] not very good, then I will rather go buy my fruits and everything else just three blocks away from here.

When asked about the prospect of using meal kits, a participant mentioned that this method would change the strategies that they employ to save money, such as using sales and discounts.

I rely heavily on, uh, advertised weekly circular sales for my purchase decisions. I also personally check for markdown items, manager specials, half-price shelves, and day-old bread shelves when shopping.

Furthermore, some participants viewed the program with excitement when provided with incentives such as discounts and free shipping for SNAP recipients.

Maybe offer, like, free shipping. For SNAP. Or, offer a discount off products. Or things like that. That would be so beneficial. You know [store redacted] gives coupons off products that they see you’ve purchased. So, something like that would be beneficial for customers...Even [store redacted] offers their SNAP users, if you have SNAP, it’s cheaper.

Facilitators Related to Social Opportunities Were Support From Family and Friends and Cultural Relevance

Support from family and friends. Some participants indicated that others
might judge them for purchasing food through the website, whereas most described that their family and friends would support their use of NY SNAP Express. One participant stated that during the COVID-19 pandemic, family and friends would identify purchasing groceries online as a safer alternative than buying food in person.

I mean, they would be fine with it. They’d probably say it was a good choice. They agreed with the whole shopping online, trying not to actually go to the store and be in the store for 45 minutes at a time rather than just do it online. And it’s a lot safer with everything with the pandemic and stuff.

Others highlighted that their families were supportive if it meant that they did not have to rely on them for transportation to the grocery store.

I’m sure they wouldn’t mind me doing it. My father would because he usually takes me to the store.

They probably would like it, so I don’t have to get rides.

Cultural relevance. The cultural relevance of the meal kits was also highlighted as a facilitator to online food purchasing through NY SNAP Express. Those from diverse racial and ethnic backgrounds described that they are more inclined to use the service if the ingredients of meal kits and the meals were familiar to them.

I’ll say, it would be more motivating to me if they... use products that I can use, especially Mexican products as well. That could be a way to something that would benefit me, right? Because sometimes if you have – if there are other products, you don’t know them, and even if they teach you, you doubt some. But, if they are products that you’re accustomed to using, that would be good as well.

Similarly, another participant described cultural foods as comforting.

Some of the comfort foods for me are not the typical comfort foods for, um. For White Americans, right? Or just Americans in general, right? Maybe, um, include a different variety of um, what is considered um, comfort food? Like, for me, comfort food is, um. Um, my mom’s um, noodle soup. Which is kinda cool. And Bok-Bok choy on the side.

Having cultural foods reflected in the meal kits seems important to reach SNAP-eligible adults from different backgrounds.

Facilitators Related to Reflective/Automatic Motivations Were Potential for Efficiency and Customization of Meal Kits

Potential for Efficiency. Some aspects of the program are convenient and would minimize the cognitive and physical effort SNAP-eligible adults put into food purchasing and preparation, especially among families with children and older adults.

I could see the really good pros of them... especially for working parents. You’ve got your recipe. You’ve got all your ingredients. Everything’s set for you. Don’t have to worry about, ‘Oh, do I have this to make dinner? Do I have to stop at the store after work?’ You’ve got everything you need all in one pack, and then you can also set your budget.

It’s convenient. It’s better to shop online, because the elderly may not be convenient to go outside. I like that. I shop, then I can get them in front of my house. This is the best.

Participants with busy schedules saw the offer to have meal kit items and groceries either picked up or delivered as time-saving and less stressful.

Well, actually, it’s definitely very helpful, being that we have three children at our house, three young children at that. And it definitely makes, you know, store trips a lot—a lot less stressful and complicated.

The potential for increased efficiency, such as through pick-up and delivery, is a major facilitator.

Customization of Meal Kits. A majority of the participants indicated that they are willing to purchase food online through NY SNAP Express if they can choose and customize the meal kits that match their own needs as well as their families.

If they’re pre-packaged, somebody like me, I wouldn’t do them, because if they’re following a recipe, it’s probably a lot of stuff in there, I wouldn’t use. Like say we’re doing a pot roast. Okay? Most of the pot roast kits have your pot roast, onions, potatoes, green pepper, red pepper, and then some spices. See, I don’t do onion or green or red pepper. So, there’s a chunk of that that’s not going to get used for me right away.

Let’s just say for instance, it’s chicken, veggie, and a dessert or something. And my kid only likes the chicken and not the veggie or the dessert, then it’s kinda of a waste. So maybe if it—I mean, I don’t know exactly how they’re planning to—to put it out there, but maybe if they can... customize, that would be nice.

From our findings, customization to modify meal kits accordingly and substitute specific ingredients and brands is an added benefit for SNAP-eligible adults.

DISCUSSION

Our formative study identified major barriers and facilitators related to one’s capabilities, opportunities, and motivations to food purchasing through an online meal kit and grocery website among SNAP-eligible adults in NY State, using the COM-B model. Developers of websites like NY SNAP Express could consider the barriers that the target audience would face accessing food online, such as limited transportation, challenges accessing and navigating English-based online websites, especially among non-English proficient individuals, and general concerns over the quality and quantity of meal kits and groceries offered through such a service.

In our study, a lack of transportation was described as a barrier to
online food purchasing, especially among those living in rural communities. Although offering pick-up and delivery services may address this challenge, previous literature on this population has concluded that there are disparities in access to healthy online grocery shopping between urban and rural areas and in which pick-up and delivery availability and internet access vary.36,37 Although there is a potential for convenience, this is only accessible to groups in higher populated areas. A lack of transportation may be especially challenging for adults who lack the physical strength to carry food purchased through NY SNAP Express. This is an example of how features within the COM-B model intersect to hinder one from engaging in the platform.

Although pick-up and delivery can offer convenience and save time, commonly noted facilitators to participation in online grocery shopping are the price of these services was a concern for participants in this study. A previous study indicated that those with higher incomes were more likely to shop online,31 suggesting that greater financial freedom could cover additional fees (eg, pick-up, delivery, service) associated with these services. However, these fees serve as a major barrier to online grocery participation among those with limited budgets.32 Online grocery websites could incorporate a way for individuals to minimize overall costs through sales and discounts as they would in-store.14,33 In addition to allowing the use of EBT to increase uptake of online food purchasing, our data also supports waiving fees associated with delivery and pick-up for SNAP recipients.

Given the online nature of NY SNAP Express, participants in our study expressed concerns over the sufficiency and quality of food they would order through the website. Concern over a lack of control over food selection is supported by previous studies. Although these websites offer convenience, there is a strong preference to physically go to a grocery store to select food items directly and when concern over inadequate food substitutions is minimal. A suggestion from participants of our study is to integrate a function on the website for participants and shoppers to communicate with one another to ensure preferences are met. Using these types of online services poses a financial risk, and for individuals who want to limit that risk, efforts to build trust are needed.30 Given the uncertainty regarding the quality of products that participants may receive after purchase, NY SNAP Express could also confirm that retail partners have a simple and quick return and refund policy to increase customer satisfaction because an inflexible one has been shown to lead to a loss of customers.35 In addition, a previous study offering meal kits to participants found that for some, the amount of food was insufficient, and participants had to make adjustments to appropriately feed their families.15 Clear communication is necessary to increase the likelihood that NY SNAP Express satisfies participants’ food needs.

Our study identified that although navigating websites is challenging for older adults, providing additional support could increase interest and use of the website. Findings from a recent study in Malaysia suggest there is a positive relationship between perceived ease of use and intention to use online grocery shopping among elderly populations.36 Therefore, making websites like NY SNAP Express easy to use, including custom training and education, can maximize participation among elderly SNAP recipients. In addition, familial support to aid and answer questions while using online services is known to sustain the use of online services.38 Two findings from this study that were not previously identified in recent online food purchasing literature are the barrier of language and the facilitator of cultural relevance. Most studies that examined perceptions of online food purchasing platforms have predominantly targeted English speakers. In contrast, our study gathered diverse perspectives and concluded that online grocery websites like NY SNAP Express may not reach non-English speaking populations in their current format. NY SNAP Express could build a more equitable platform by providing content in multiple languages and creating meals representative of diverse cultures. To connect back to the COM-B model, this is a potential solution that addresses a barrier regarding platform accessibility and provides opportunities that meet the food needs of SNAP recipients who belong to minority groups.

Interestingly, the stigma surrounding a SNAP-led effort was considered a barrier to online food purchasing. This contradicts a previous study among a similar population that suggests online grocery shopping could potentially decrease stigma because shoppers are not aware of EBT redemption.29 Some participants in our study disclosed possibly feeling judgment if those in their immediate circle were made aware of their participation. This could be a result of SNAP as part of the program name and the potential stigma surrounding the use of food assistance. More research is needed to understand experiences with stigma among those who receive food assistance benefits and its intersections with other facets of one’s identity.

Our study also found that SNAP-eligible adults are willing to purchase food online through NY SNAP Express if it offers affordable meal kits and educational resources and allows them to efficiently purchase and prepare foods that are also customizable to meet their household’s needs. Not only do some participants perceive that they can access affordable food more efficiently through the program, but some families believe they will gain food-related knowledge and skills through the resources offered (ie, recipes and preparation tips).14–16 In addition, most participants highlighted how critical the choice and customization of meal kits are in their willingness to partake in the program. In essence, participants want autonomy in the food selection process to meet their food preferences and their family’s needs. This aligns with findings from a previous meal kit pilot intervention study in which participants preferred a range of meal kits to choose from and modified recipes to meet their needs.15 There are several limitations to this study. First, a convenience
sampling approach decreases the transferability of study findings. In addition, because the NY SNAP Express website was under development during the time of the study, participants did not have an opportunity to test or use the website. It is possible that interview questions were challenging for some participants, especially among those who spoke in Spanish or Chinese. Although translated, this could have led participants to misinterpret questions and respond accordingly. Furthermore, findings are self-reported, and because we did not follow up and conduct member checks with participants to check the accuracy of themes, this decreased the study’s credibility. 39 Although 2 recruitment periods allowed us to diversify our sample and capture both urban and rural perspectives of NY residents, the period in which the interviews were conducted could have shaped responses. For example, interviews conducted in the initial recruitment period occurred 1 year after the COVID-19 shutdown in the US. To reduce the risk of exposure, especially with the emergence of new COVID-19 variants, participants may have had to rely on online grocery retailers, which could have shaped their perspective on purchasing food online. 40 Overall, findings may not completely reflect the true perspectives of individuals before the pandemic when purchasing groceries online was not as prominent. 41

**IMPLICATIONS FOR RESEARCH AND PRACTICE**

With the expansion of the SNAP Online Purchasing Pilot, websites like NY SNAP Express have the potential to improve food access among families with limited resources. The COM-B model demonstrated that for SNAP-eligible adults to purchase food online, program developers, online food retailers, and policymakers could consider addressing barriers and highlighting facilitators during the rollout of NY SNAP Express and similar platforms. For NY SNAP Express specifically, gathering feedback from SNAP-eligible users on the entire process of selecting, purchasing, acquiring, preparing, and consuming meal kits would provide insight into its feasibility and acceptability.

Our findings support improvements within NY SNAP Express and similar websites before pilot testing. First, the website could provide diverse meal kits for participants to select, as well as an option for users to customize and build their meal kits with recipes that fit their needs and preferences. Additional features within the website (e.g., tags for participants to organize and identify recipes) could be beneficial. For example, it may be helpful for those who are looking for quick recipes to be able to organize and list the recipes on the website by the amount of time required to prepare and cook the meal. We also suggest a way for participants to communicate their needs and preferences to the person shopping for their ingredients once they have submitted their order, such as via text. This could be helpful in making appropriate substitutions for unavailable ingredients because this was a concern for study participants. Incorporating multilingual, educational resources to help participants navigate the site, as well as nutrition-related information beyond recipes and tips, is an additional value. Finally, we encourage policymakers to consider offering free delivery and pick-up to SNAP recipients to increase uptake of these services. Removing the financial burden for these services promotes equitable access to nutritious and affordable food.

**ACKNOWLEDGMENTS**

This study was conducted in partnership with New York Supplemental Nutrition Assistance Program-Education (NY SNAP-Ed), the Office of Temporary and Disability Assistance (OTDA), and Mediaforce. This study was funded by the Federal Capacity Funds, the National Institute of Food and Agriculture, US Department of Agriculture (2021–22–211). The funding agency was not involved in the conceptualization and implementation of the research study. We appreciate the guidance and support we received from our NY SNAP-Ed partners including Shayna McGeady Russo, Erica Dahl, Steven Alimonou, and their team as well as Lisa Irving and Sean Hayes at OTDA. Finally, the authors of this study would like to express their deepest gratitude to the study participants for their time and effort.

**SUPPLEMENTARY DATA**

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jneb.2023.10.016.

**REFERENCES**


ARTICLE IN PRESS

Journal of Nutrition Education and Behavior • Volume 000, Number 000, 2023

Chiong et al 10.e1


ORCIDs

Reah Chiong: http://orcid.org/0000-0002-3388-0767

Emily St John: http://orcid.org/0000-0001-5646-1402

Roger Figueroa: http://orcid.org/0000-0002-2549-7741