

Youth Perceptions of Food Environment in the High Point Neighborhood in Seattle, WA

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ABSTRACT

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Poor nutrition in adolescence can cause immediate and long-term poor health outcomes. Nutrition in adolescence is shaped by a variety of factors (e.g., family economic resources, food environment, social and cultural norms, and preferences) and establishes eating habits which are maintained in adulthood. Many studies have examined objective food environments, yet few studies have qualitatively examined the perceived food environment, and even fewer have engaged adolescents. Our study aimed to fill this gap by interviewing youth about how their families interact with the local food environment. We conducted semi-structured interviews with youth age 13 to 17 years old who live in a neighborhood in Seattle, WA identified as having a high priority for food access. Participants were recruited through local community organization youth programs with the assistance of program leaders. We found five main themes. First, cost was the primary determinant of where families shopped and what they bought. Second, access to transportation mitigated the lack of nearby food retailers. Third, participants' families utilized limited resources to travel farther to obtain culturally relevant food. Fourth, lack of satisfaction with school lunch influenced what food and how much food youth ate during the day. Fifth, participants discussed the upstream issues facing their communities and have a desire to engage in conversations about improving food access in their communities. The youth voice is often underrepresented and should be included and heard in policy discussions about food access issues.

INTRODUCTION

Poor nutrition is a major issue among adolescents in the U.S. Overall, diet quality among children and adolescents of all age groups in the U.S. fails to meet the Dietary Guidelines for Americans (Thomson et al, 2019; Banfield et al, 2016). Diet quality is also significantly worse among older adolescents and varies widely by race and ethnicity (Thomson et al, 2019; Banfield et al, 2016). Poor nutrition in childhood and adolescence can cause poor physical and mental health outcomes, such as obesity and depression (Grossman et al, 2017; O'Neil et al, 2014). Obesity prevalence among adolescents in the U.S. is particularly concerning. Almost 20 percent of children and adolescents (ages 2-19) in the U.S. were obese in 2016, and there are disparities in obesity and related disease prevalence by socioeconomic status and race/ethnicity (Hales et al. 2017). Obesity in adolescence is associated with mental health issues, asthma, and various negative sleep, orthopedic, cardiovascular, and metabolic outcomes (Grossman et al. 2017 JAMA). Further, adolescence is a sensitive period of development, where exposures to certain factors can have a greater effect on health across the life course (Keyes & Galea 2016). Poor diet quality early in life can not only cause immediate negative health effects, it can affect health later in adulthood. Eating behaviors adopted in adolescence develop into habits in adulthood, which are difficult to break once established (Craigie et al, 2011). In adulthood, studies show that a high-quality diet is associated with significantly reduced risk of overall mortality, cardiovascular disease, cancer, type 2 diabetes and neurodegenerative disease (Harmon et al, 2015).

Nutrition in adolescence is shaped by a variety of factors including family economic resources, food availability and accessibility, social and cultural norms, and personal attitudes, beliefs, and preferences (Das et al, 2017). There is extensive public health literature on food deserts and food environments as potential contributors to poor nutrition and obesity, in part because it offers a relatively simple public health solution: establish new grocery stores or

increase the amount of healthy food available in existing stores. However, research findings are mixed and most recent studies show little or no association between food deserts or physical proximity to food retailers and either nutrition quality (Block, et al., 2015; Stevenson, et al, 2019) or obesity (Rosenberg & Cohen, 2018; Gamba, et al., 2015). There are several criticisms of the concept of food deserts. One is that it assumes people shop at their nearest grocery store, which many studies have found to be inaccurate particularly for low-income individuals for whom food price was the main reason for store choice (Breyer et al., 2013; Ver Ploeg M, 2015; Aggarwal, et al., 2014). Another is that the definition of food deserts focuses too heavily on availability of healthy food, rather than considering the pervasiveness of unhealthy food. Studies have found that areas with higher density of fast food and junk food than healthy food ('food swamps') are more strongly associated with poorer nutrition quality (Hager, et al., 2017) and obesity (Cooksey-Stowers, et al., 2017) than are food deserts. Further, a large systematic review of the qualitative literature on the association between *objective* local food environment measures on adult eating behaviors identified a need for future research to explore how different people from the same neighborhood interact with and perceive their food environment (Pitt et al, 2017).

Yet, few recent studies have qualitatively examined *perceived* food environment, and even fewer have engaged adolescents. Those that have engaged adolescents focused on school food environments (Spencer et al., 2019) or their perceptions of healthy eating (Swanson et al, 2013; Fielding-Singh, 2019). Our study fills this gap and builds on the 2019 *Healthy Food Availability & Food Bank Network Report*, funded by the Seattle Sweetened Beverage Tax, which aimed to identify and assess areas in Seattle that are high priority for healthy food access (Bolt, et al. 2019). The report identified parts of the city as 'healthy food priority areas' – areas with high poverty, longer travel times to food retailers, and areas inundated with unhealthy food

retailers (Bolt, et al. 2019). One main limitation of the study was the lack of qualitative data voicing resident perceptions of access to food in healthy food priority areas.

Our study sought to gather the resident experience of accessing food in the High Point neighborhood, because it was identified, in the 2019 Health Food Availability Report, as having a percentage of unhealthy food retailers, long travel times to food retailers, and a high percentage of individuals and families with low-income (Bolt, et al., 2019; City of Seattle, 2017). High Point also had the lowest number of any food stores identified through both a categorized permit database and in-person store assessment (“ground-truthing”); zero healthy food stores and between 8 and 10 unhealthy food stores (Bolt, et al., 2019). Our main research question was: “what are the perceptions of the local food environment of youth living in High Point?” Our secondary research questions included: “how do youth in High Point (and their families) access food”, and ‘what factors influence the food they eat?’

METHODS

We developed our methods and results according to the guidelines for qualitative interview protocols provided by the *Consolidated Criteria for Reporting Qualitative Research (COREQ) Checklist*, which helps researchers report important aspects of the study team, methods, context, findings, analysis and interpretations (Tong et al, 2007).

Study Setting and Participants

Our study examines perceptions of food access from youth living in the High Point neighborhood of Seattle, WA. Our community partners expressed concern that the youth perspective is rarely considered. As such, adolescents age 13 to 17 who self-describe as living in High Point were eligible to participate in this study. Adult High Point residents age 18 and older were interviewed as part of a related study reported elsewhere (Wool et al, Unpublished Manuscript).

Recruitment

City and county agency colleagues from the *Healthy Food Availability Report* identified and connected us with local community organizations, social services agencies, and community leaders in High Point to assist with recruitment. We attended a community meeting, where we met several local leaders, including staff from the local public library branch, social services, community centers, and youth programs. We posted recruitment flyers (**Appendix A**) at the community organizations and several local youth program leaders helped recruit adolescents from their program activities for interviews.

Data Collection

We developed our semi-structured interview guide based on food environment literature (Fielding-Singh, 2019; Cannuscio et al, 2014; Cohen et al, 2002; Kumar et al, 2011), and adapted and created questions to meet our study aims. We then used a framework of food access domains (availability, accessibility, affordability, acceptability, and accommodation; **Appendix C**) used in the *Healthy Food Availability Report* (Bolt et al., 2019) to organize and map out questions to ensure that we were not missing important areas. To construct the semi-structured interview guide (**Appendix D**), we used questions mapped to the food access domains and included introductory questions about favorite foods (to build rapport and allow participants to feel more comfortable) and conclusionary questions about the neighborhood in general for context. A few examples of domain mapped questions included: can you walk me through a typical day of getting food in your household? (availability); how does how close you are to food stores impact the food you eat? (accessibility); and what makes it hard to get food in your neighborhood? (accommodation).

One researcher conducted 13 interviews (EKT), and another took detailed notes (JW). Both researchers were White, female, and Master of Public Health students in the final year of

their studies at the University of Washington. Both also had prior experience with and coursework in qualitative methods. Researchers did not know participants before interview recruitment began. We obtained written assent (**Appendix B**) from each participant prior to starting each interview and acknowledged our student status and affiliation with the University of Washington. The University of Washington Human Subjects Division (institutional review board) approved this study under expedited review. Due to the minor status of our participants, we were unable to audio record our interviews without parental consent. Further, needing to obtain parental consent would have provided a significant barrier to conducting any interviews in our short time frame. Therefore, during each interview, while one team member conducted the interview, asking questions from our semi-structured interview guide, another team member took contemporaneous and detailed notes. After the interview, the note-taker read back the notes taken for each question and asked the participant for confirmation or clarification for internal validity. Reading back participant responses as transcribed by the notetaker allowed us to verify the contents of the quotes we included in our results. Next, each participant completed a brief demographics survey (**Appendix E**). Then we provided each participant with a \$20 cash incentive. Notes from each interview were uploaded into Dedoose for analyses (Dedoose, 2020).

Data Analysis

We qualitatively analyzed the interviews using content analysis, applying deductive and inductive coding techniques to the interview notes. We developed a codebook (**Appendix F**) based on three robust interviews using both deductively developed structural codes and inductively derived emergent codes (Tolley et al, 2016). Structural codes were based on the five domains of food access, from the *Healthy Food Availability Report*, which we also used for mapping the original interview questions. Then two independent coders (EKT, JW) read and coded the interview notes until 80 percent intercoder reliability was achieved, which occurred

after the 6th interview. Next, one coder (EKT) coded the remaining transcripts. Any coding discrepancies were reviewed and discussed by the coders until we achieved consensus. Ultimately, 43 codes were reviewed and analyzed for themes using coding reports.

Community Meeting

In addition to validating responses from participants during the interview, we also planned to host a community meeting with the High Point community organization where we conducted interviews, to get feedback on our preliminary results with both participants and non-participants. However, the COVID-19 pandemic social distancing policies made meeting in-person no longer an option. Further, after discussion with our community contacts, we decided it would be infeasible to host a community meeting remotely given the technological requirements of an online meeting and the inequitable access to technology and internet in the community. Instead, we presented our preliminary results and solicited feedback from our organizational community partners on May 6th, 2020 via Zoom conferencing. We used the feedback obtained from this meeting to inform our final analysis and interpretation of results to ensure we accurately represented participant meanings and perspectives (Tong et al, 2007). Additionally, we hope to reach out to the community to present our findings and obtain feedback when state-wide social distancing policies allow.

RESULTS

Demographic Characteristics

We conducted 13 interviews approximately 30 minutes in length with adolescents in January 2020 at a central community organization in High Point. During one interview, one participant's younger sibling was present during the interview. Otherwise, only the interviewer, note-taker, and participant were present during each interview. Participant demographic characteristics (n = 13) are included in **Table 1**. The mean age of participants was 15 years old and 61.5% of

participants self-identified as male. Participants' year in school was relatively balanced across grades 7 through 12, with each grade level represented by at least one participant. Participants self-identified as Black or African American (61.5%), Asian (30.8%), or other race or ethnicity (7.7%), with numbers collapsed to preserve anonymity. Mother's education ranged across all education categories, from 'did not finish high school' to 'graduate or advanced degree,' with three participants' mothers having a 'college' or 'graduate or advanced degree' (23.1%). Additionally, most participants noted they received free or reduced-price lunch at school (84.6%). All participants indicated they lived with their parent, stepparent, or legal guardian.

Qualitative Results

All participants noted their families drove to multiple stores to get food, and did so for a variety of reasons, including to integrate with their schedules, to find the best deals, and to obtain culturally relevant food.

Transportation as a mitigator of lack of nearby food retailers

Generally, most participants perceived food as available (adequate supply of healthy food), particularly if they traveled outside High Point. All participants mentioned their families drove to purchase or obtain food and did not perceive proximity as an issue in obtaining food. However, almost all participants commented about the lack of grocery stores in High Point and thought accessing food without using a car would be a challenge.

"If you have a car, you would drive somewhere to buy food. Nothing in this neighborhood would give you food." – Participant 1

Stores are either located a few miles away or are opposite geographical barriers. For example, one store was mentioned several times, but participants commented that it would be inaccessible without a car because its situated at the bottom of a hill, which would require walking back up with the hill with groceries.

Even though proximity did not determine where participants' families got most of their food, it impacted where participants themselves purchased food. Participants said they had to take the bus or walk if they wanted to purchase their own food. Therefore, proximity to food retailers determined where they bought food for themselves. Similarly, participants thought families without access to a car rely on food stores within High Point, which provide less healthy food options, such as convenience stores, pharmacies, corner stores, or gas stations.

"Some people don't have cars, so they aren't willing to go farther away to get food, so they'll send their kids to get food from the convenience store, which is bad." – Participant 5

Participants thought shopping at small convenience stores provided less healthy food options, which they perceived as harmful to health.

While a few participants thought proximity to food stores significantly impacted where their families bought food, most thought convenience was more influential. Participants mentioned that their families shopped for food when it fit into their schedule or when their daily activities made it convenient to shop. Participants also noted that it was often easier to make one trip to a larger food retailer to get more food, than making more trips to smaller stores.

"I don't think [proximity] is very impactful because a lot of the stores have the same options. It's just a matter of how convenient it is—more convenient to go to Costco once." – Participant 5

Another participant mentioned their parents stopped at the grocery store on their drive home from work. All these approaches to obtaining food – either taking one trip to a large wholesale store or integrating trips to the grocery store into other activities – required access to transportation.

Cost as the primary determinant of where to shop and what to buy

All participants commented that cost influenced what they ate by determining where they shopped and/or what they bought. One participant thought cost was non-prohibitive, particularly relative to other items people buy, such as electronics. Participants mentioned their families purchased certain foods only when on sale and would buy more of a food if it was on sale. Participants also commented that their families knew where to shop to get the best deals and would shop at multiple stores to do so.

"If something is on sale [my mom] will get a lot of it. I think she gets [food] where it is cheaper or of good quality... She knows when things are cheaper elsewhere." – Participant 12

Participants also noted that in addition to the actual prices of food, the cost of time and transportation required to obtain food was also influential for their families and other members of the community. As such, many participants said their families used grocery store memberships to maximize their savings, either through rewards programs (e.g., Safeway's gas rewards program) or through wholesale stores, such as Costco.

Importance of Culturally Relevant Food

Almost all participants mentioned their families shop at specialty stores and food retailers that carry culturally relevant food in addition to shopping at other grocery stores. Participants said there are several Somali food stores in the neighborhood that stock a variety of cultural foods, such as halal meat and sambuusa. One participant commented that the food bank nearby occasionally carries halal meat and poultry as well, but they run out very quickly due to high demand. Other participants noted the cultural food stores (particularly, Somali stores) provide their families a sense of community.

“Mom goes to halal markets to talk to people. She went to get meat once and some kind of tea similar to Boba tea. I try to get halal marshmallows.” –

Participant 12

Although many participants utilized cultural food stores, several felt there was a distinct lack of stores providing food for other cultures.

“A lot of Somali people live here so [there are] Somali shops nearby, but not as many Asian or Mexican stores nearby representing other people’s culture.” –

Participant 8

Participants also felt that people were willing to travel farther distances with longer travel times for culturally relevant food. Some participants noted their families traveled to White Center or Chinatown weekly, which provides more evidence of the importance of culturally appropriate foods.

Lack of satisfaction with school lunch

Satisfaction with school lunch determined what food and how much food youth ate throughout the day. A few participants were content with school lunch, but most participants vehemently disliked school lunch. Only four participants said they regularly ate school lunch (31%) and two said they rarely or occasionally ate school lunch (15%). Most participants either brought lunch from home (40%), bought lunch off campus (7%), or skipped lunch altogether (15%). The few participants who noted they skipped lunch because the food was so poor and said they compensated by eating more at home before and after school.

“At school I just don’t eat lunch because school lunch is never great. I don’t eat anything at the day during school. I don’t bring anything from home.” –

Participant 11

One participant similarly disliked school lunch but thought it was better than not eating at all. The main issues participants had with school lunch included poor overall food quality, inappropriate food temperatures (e.g., food was not warm enough), too processed, not enough options for certain dietary restrictions (e.g., lactose intolerance), and lack of culturally appropriate food.

Inclusion of Youth Voice

Awareness of Family Challenges

Participants were aware of their family's finances, evidenced by their knowledge of how cost shaped where their families shopped, what they bought, and their understanding of their families' food assistance program use. Participants knew their family's financial situation not only impacted what foods their families purchased in stores, but it also determined whether their family ate out at restaurants.

"Sometimes cost plays into where we get food. We don't go to fancy restaurants.

I'm pretty sure [my parents] are trying to keep the price low." – Participant 3

Similarly, about half of the participants said their families used some type of food assistance program. Two indicated they used the food bank and five used the Supplemental Nutrition Assistance Program (SNAP) (formerly known as the Food Stamp Program) or the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). A few participants commented on the stigma associated with using food assistance programs.

"[We use] an EBT card. [My mom] tells me not to tell anyone, but if [my answers here] aren't attached to my name... That's what she gives me when I go to Walgreens." – Participant 12

Other participants, while noting that stigma is often associated with food assistance programs, expressed not personally perceiving any shame or judgment when their families use food assistance programs.

Additionally, several participants commented that food, particularly healthy food, was becoming increasingly expensive, which they thought could increase reliance on food assistance programs for families in the community. Another participant found it illogical that junk food was less expensive than healthy food and thought policies should address that inequity.

Awareness of Community Challenges

Participants were also aware of the main issues facing families in their community, such as lack of economic resources and affordable housing, and how both contribute to food insecurity in their neighborhood. For example, one participant commented that because families living in High Point are low-income, parents are forced to work long hours to support their families and children eat more junk food. One participant added *“I’m lucky my mom is there more to monitor what we eat”* (Participant 5). Several participants also commented about how access to affordable housing could be a more upstream issue that could impact food security. For instance, one participant noted that housing in Seattle is so expensive that people are forced to spend more money on rent or mortgages, which leaves less money for food.

“I’ve never had trouble getting food. If I am going to be judging from what I hear around, it is because of how expensive houses are around here. They might not be able to afford things with a mortgage... I feel like if we were to make houses cheaper than people would have more money for food.” – Participant 12

Desire for Empowerment of the Youth Voice

Further, participants thought it was important to empower voices in the community to help solve neighborhood food access challenges to ensure solutions are tailored to community needs. While participants noted they do not purchase most of the food for their families, they access food in different ways than adults and think their voice is equally valuable. Several participants noted that anyone who uses and interacts with the food system has their own relevant knowledge and experience.

“Including youth shows their standpoint on how they get their food and how it could be improved. Asking anyone would be important to understand how food plays a part for them.” – Participant 3

Participants thought they would bring new ideas and different perspectives than adults, which would highlight their unique challenges accessing food. Further, several participants emphasized the importance of involving people from different backgrounds to ensure the entire community feels represented and included.

“Include other youth and people of different races and ethnic backgrounds. [There is] a huge population of Somalis here, but sometimes I feel a little out of place because there aren’t a lot of programs for Black American kids. I wish we had people of all different backgrounds to have different perspectives.” –

Participant 2

Overall, participants believe it is important to include youth and people of diverse backgrounds in conversations about improving food access in their neighborhood because they bring different and underrepresented perspectives.

DISCUSSION

This study showed that youth have insightful knowledge about how their families interact with the food environment. First, cost was the primary factor for families when deciding where to

shop and what food to buy. Second, families shopped at multiple stores for two main reasons other than cost, 1) to integrate with their schedules (convenience), and 2) to get culturally relevant food. Third, families primarily accessed the food system using a car, which seemed to mitigate the noted lack of grocery stores within High Point. Fourth, most participants were not satisfied with school lunch, which influenced the food they ate throughout the day. Last, participants thought that although the youth voice is often underrepresented, they have the knowledge and desire to learn and engage in conversations about improving food access in their community.

Cost both determined where families shopped and what food they bought. Participants said their families would bypass closer stores to shop at stores that either allowed them to shop in bulk to save money (e.g., Costco) or at stores with cheaper prices. Their families also looked for food on sale within stores. These findings are consistent with results from other studies that found cost as the main driver of where people shopped and what they bought (Andress & Fitch, 2016; Elbel et al., 2019). Families also integrated food shopping into their other daily activities, such as commuting home from work, before picking up children, or while out running other errands. Other studies have similarly found that low-income families shop at multiple stores (Andress & Fitch, 2016) and integrate food shopping into their routines for convenience (Cannuscio et al, 2014). Participants also prioritized shopping at stores that carried food that was culturally relevant for their families, even driving up to an hour to get it. Local policies could potentially provide additional subsidies to both help offset high food prices and provide culturally relevant food in existing food retailers. More research is needed to determine the extent to which people are utilizing limited resources to travel farther distances to obtain culturally relevant food.

Transportation is often cited as a central issue in the food environment literature, particularly for low-income individuals (Kumar et al, 2011). One study examining a

neighborhood near High Point found transportation access (e.g., bus lines) to be a priority area to focus on to improve access to healthy food (Seattle Women's Commission, 2014). However, we found that all participants' families had access to a car and typically drove to purchase food, and participants did not perceive transportation as a challenge for their families to obtain food. Further, family's access to transportation expanded their food retail options and allowed them to shop at grocery stores outside of High Point. The difference in transportation access between our finding and other studies may be because low-income families with children may be more likely to have cars than low-income individuals without children. High Point youth program leaders confirmed that most families they work with have access to at least one car and they thought it was particularly true for large families (Personal communication with youth program leaders, 2020). Another reason could be that participants were not involved in family conversations about the cost of having a car, including parking, maintenance, and gas.

Interestingly, two common themes occurring in the food literature, store hours (Lee et al, 2010; Caspi et al, 2012; Andress & Fitch, 2016) and types of payment accepted (Caspi et al, 2012; Andress & Fitch, 2016), did not emerge in our interviews. One possible reason for the absence of these themes in the data is that most participants did not shop for groceries themselves, and thus may not be as concerned about hours of operation or the type of payment accepted as their parents or other family members. Additionally, youth only occasionally mentioned purchasing food themselves – usually during lunchtime at school or for snacks.

One important emergent theme from this study was the overwhelming dissatisfaction with school lunch. Strikingly, while eleven of thirteen participants indicated they are eligible to receive free or reduced-price lunch, most noted they did not regularly consume school-provided lunch (69%). Instead, participants either brought their lunch from home, bought food off campus, or skipped lunch altogether. Given the National School Lunch Program provides a significant amount of food each week for nearly half of all children in the U.S. (USDA, 2017; National Kids

Count, 2019), including those most at-risk of food insecurity across the U.S., this finding is alarming and requires additional investigation. While our study did not aim to examine school lunch, our results suggest Seattle Public Schools may want to engage students from all schools to capture the student voice and food preferences to encourage students to eat school-provided lunches. Further research is needed to examine whether dissatisfaction with and refrain from eating school lunch is generalizable in other contexts and larger samples across Seattle. School districts and school food authorities are often met with the challenge of balancing nutrition quality, cost, and student preferences - a considerably difficult task (Wilde, 2018). One study based in a large urban setting in Washington State found that improvement in dietary quality standards in several middle and high schools did not change participation in school lunch (Johnson et al, 2016). However, one recent study qualitative study in Los Angeles, CA found that youth want to be engaged in the process to improve school lunch (Asada et al, 2017). Since communities and neighborhoods across Seattle are demographically and culturally heterogeneous (City of Seattle, 2017), tailoring food options for specific schools based on student preferences may increase school lunch participation. Additionally, given the importance of culturally relevant food to participants and families from our study, inclusion of more culturally appropriate food may be one potential area for school districts to explore.

Another key emergent theme is the importance of including the youth voice in conversations about how to improve food access and related issues in their neighborhood. Youth bring a different viewpoint than adults, one that includes how they interact with their food environments without adults or families and school lunch. Further, participants were incredibly perceptive about their food environments, family financial situation, and the strengths and challenges of their neighborhood. Additionally, participants identified lack of economic resources and affordable housing as main concerns for their community, particularly in the context of an expensive and rapidly gentrifying Seattle. Participants also emphasized the need for community

representation from people of different races, ethnicities, and backgrounds in conversations about improving food access in their neighborhood. These points are all the more salient given studies have found that racial and ethnic minorities are more vulnerable to food access inequities due to current and historical structural and institutionalized racism (Colon-Ramos et al., 2018; Cooksey-Stowers et al., 2017; Kumar et al., 2011; Freedman & Bell, 2009).

Participants also voiced a desire to be a part of conversations about improving food access and other areas of their neighborhood to be better engaged and learn about the change process. Similarly, one study that used Photovoice to learn about students' experiences with food at school, found that youth desire to be included in determination of school lunch policies yet are often left out of policy discussions (Spencer et al, 2019).

Limitations

One limitation of the study was that we had a limited sample of thirteen youth. However, we did achieve saturation. We potentially did not hear from youth not associated with collaborating youth programs or neighborhood community organizations, who could be different from our study participants and potentially more vulnerable. Another limitation is that all respondents were people of color, which is not representative of the High Point neighborhood. However, High Point is significantly more diverse than Seattle overall, with 36.0% White (compared to 64.5% city-wide), 34.7% Black or African American (6.8% city-wide), and 14.6% Asian (14.9% city-wide) (City of Seattle, 2017; 2018). Therefore, we captured perceptions from a potentially more vulnerable population and a group of youth whose voices often go unheard. We also acknowledge that having White adult interviewers interview participants who are all youth of color may have limited the candidness or reactions to questions of participants. We were also limited to taking notes during the interviews and thus did not produce full transcripts of the interviews. However, as recommended by the COREQ checklist (Tong et al., 2007), we read responses to each question back to participants after the interview to ensure accuracy of the

notes and presented our results to community youth program leaders via video conferencing to obtain additional feedback.

CONCLUSION

Youth perceived cost, convenience, and the availability of culturally relevant food as the major determinants of where their families shopped and what food they bought. They also thought proximity to food retailers was more critical for people without access to transportation. Youth know the important challenges for their families and communities and want to participate in discussions about neighborhood food access and bring important perspectives that are often left out of food policy discussions.

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Table 1. Participant Demographics (n = 13)

	Mean	SD
Age	15	1.4
Number of people in household	4.8	1.6
Years lived in High Point	11.0	3.7
Year in School	N	%
7 th Grade	1	7.7
8 th Grade	3	23.1
9 th Grade	3	23.1
10 th Grade	1	7.7
11 th Grade	3	23.1
12 th Grade	2	15.4
Gender	N	%
Female	5	38.5
Male	8	61.5
Other [^]	0	0
Race/Ethnicity	N	%
Asian	4	30.8
Black or African American	8	61.5
Other [*]	1	7.7
Mother's Education	N	%
Did not finish high school	4	30.8
High school diploma or GED	3	23.1
Some college or technical training	2	15.4
College degree	2	15.4
Graduate/advanced degree	1	7.7
Don't know	1	7.7
Receives free/reduced price lunch	N	%
Yes	11	84.6
No	1	7.7
Not sure	1	7.7

[^]Other gender identity category includes: transgender female, transgender male, gender non-binary, not listed, prefer not to say.

^{*}Other race/ethnicity category includes: Hispanic or Latino, Pacific Islander, White, Native American, American Indian, or Alaska Native.

Appendices

Appendix A. Recruitment flyer

TELL US!

**How do you get your food?
What do you like to eat?**



Participate in a 30-minute interview and **receive \$20** for your time. Anyone over the age of 13 who live in High Point can participate.

Sign up today!

What will I be asked to do?

Participate in an in-person interview. Each interview will take around 30 minutes, and questions will focus on how you get and prepare food in your neighborhood.

What are the benefits and risks of participating?

Findings will inform understanding of food access in your neighborhood. The only risk is that you may feel uncomfortable answering some questions. Participation is voluntary. You can stop participating any time.

What if I have questions?

This project is being done by a research group at University of Washington. Feel free to email us with any questions.

Contact: UW MPH students Erin Thayer and Jenny Wool: email thayere@uw.edu or jwool@uw.edu

Other details:

This is a research study. Interviews will be confidential. The study team will not use your name when sharing interview results.

To participate please contact Erin Thayer (at thayere@uw.edu) or Jenny Wool (at jwool@uw.edu)

Appendix B. Child Assent Form

**UNIVERSITY OF WASHINGTON
ASSENT TO RESEARCH
STUDY OF FOOD ACCESS**

Lead Researcher: Erin Thayer (graduate student in the School of Public Health, Department of Health Services)

Contact information: thayere@uw.edu (email), 503-481-0947 (phone)

Faculty Advisors:

- Jesse Jones-Smith, PhD (faculty in the School of Public Health, Department of Health Services)
- Stephanie Ann Farquhar, PhD (faculty in the School of Public Health, Department of Health Services)

Researcher's statement:

My name is Erin Thayer.

We are asking you to be in a research project because we are trying to learn more about what food you eat, what you think about the food you eat, and how and where you and your family get food.

If you agree to be in this study I will ask you about you and your family's experiences getting and eating food. This will take about 60 minutes. You will receive \$20 for participating in this interview.

Your name will not be tied to anything you say or any answers you give. We will use an ID number to keep your information private.

There may be a loss of confidentiality, but we are storing your identifiable information in a way that we do not anticipate this happening. You may feel uncomfortable answering some of the questions. You can skip questions that you don't want to answer. We do not think you will benefit from participating in this study.

If you don't want to be in the study, you don't have to participate. Remember, being in this study is up to you and no one will be upset if you don't want to participate or even if you change your mind later and want to stop.

You can ask me any questions about the study. If you have any questions later or want to withdraw your data from the study you can call me at 503-481-0947 or ask me at any time during the interview.

You can also contact the University of Washington Institutional Review Board at 206-543-0098 or call collect at (206) 221-5940, or you can email at hsdinfo@uw.edu if you have questions about your rights as a participant or if you have any questions.

Printed name of subject

Signature of subject

Date

Appendix C. Dimensions of Healthy Food Access (Bolt et al, 2019)

Domain	Definition	Examples
Availability	Adequacy of supply of healthy food	Number of places to purchase produce; presence of certain types of restaurants
Accessibility/Convenience	Geographic location of food supply and ease of getting to that location	Time; distance
Affordability	Food prices, people's perceptions of worth relative to food cost and ability to pay for food that is available	
Accommodation	How well food sources accept and adapt to residents' needs	Store hours; types of payment accepted; culturally relevant food
Acceptability	Attitudes regarding local food environment and whether the supply of products meets personal standards	

Appendix D. Interview guide

Date:

Time Length:

Participant ID:

Interviewer Name:

Interview Location:

INTRODUCTORY SCRIPT

Thank you for talking with me today. The purpose of this study is to get your perspective on how you access food in your neighborhood. We hope to share what we find with both you and with city leaders, who are actively looking for solutions and to make sure your voice is included in this conversation. Do you have any questions about why we're here today?

Okay, I'm going to take us through several questions about your experience getting and preparing food in your neighborhood.

The interview will take approximately 30-40 minutes, and we can stop at any time.

To make sure I have accurate information, [other person] will be taking notes during our conversation. Your name and contact information will not be stored with your responses. We will use an ID number in the transcription instead of your name.

Do you have any questions for me before we begin?

INTERVIEW QUESTIONS

1. Can you tell me about your favorite foods to eat?
 - Why are these your favorite foods?
 - How often do you eat them?
2. Tell me about what kinds of foods you typically eat in your household?
 - On weekdays?
 - On weekends?
 - At home? At School? Out?
3. Can you walk me through a typical day of getting food in your household?
 - Are there any foods you want to get or purchase, but can't? If so, can you tell me a little bit about that?
 - Probe: How long does a typical trip take?
 - Probe: How do you typically get there?
 - *Probe for where, when, how frequently, and mode of transportation used*
4. How do you and your family decide where to get or buy food? [at home, at school...]
 - From your perspective, how does how close you are to food stores impact the food you eat?
 - What makes it hard to get food in your neighborhood?
5. Can you tell me about all the different ways that you and your family get food? For example, potlucks, the grocery store, food banks, SNAP, WIC, any other "free food"?
 - *If yes:*
 - What is your experience like with each? What has your experience been like using them?
 - How much of a source of food is X for you in your weekly groceries?
 - How did you find out about X [e.g., the food bank]?

- *If no:* Have you used any the past?
- 6. How has access to food in the High Point neighborhood changed in the time that you've lived here?
 - For example, is it harder than when you first moved here, easier, or about the same?
 - *[If change reported]* Probe for reason(s) why:
 - Financial reasons
 - Mobility constraints
 - Decreased cultural food options
 - Increased cultural food options
 - What do you think the experience of accessing food is like for other people in the neighborhood? Do you know of people who are struggling?
- 7. City leaders are actively talking about how to improve access to food in your neighborhood. Do you think improving access to food is a good area to focus on?
 - What are some things you would like to see changed?
 - *If need rephrasing:* what are some things that could improve your access to food?
 - [PROCESS] Probe: would you like to be part of the conversation or have other representatives from your neighborhood?
 - [PRODUCTS] Probe: what types of food, stores, hours, public transportation, services would you like to have or change in your neighborhood?
 - Probe: Do you feel healthy food access is a concern of your community?
- 8. [Potential Reflection Question if time]: If your family had significantly more money for food, how do you think you would eat in your family?

CLOSE-OUT

Great, that's all the questions I have.

- Is there anything else that you'd like to share with me about food in your family?
- Do you have any questions or additional comments for me before we wrap up?

We have a brief (two-minute) demographic survey we hope you can fill out, just to help put our interviews in context. As before, we will use an ID number instead of your name, so your name will not be tied to your responses. Are you willing to take the survey?

Thanks so much-- I really appreciate you taking the time to talk with me today, and I am happy to share the results of our project with you when we finish in late Spring if you would like. In the meantime, please feel free to reach out to me at any time if you have any questions. [MAKE SURE THEY HAVE YOUR CONTACT INFO] Thank you again.

Appendix E. Demographics Survey

ID Number: _____

Please answer the questions below to the best of your ability.

What is your age?

- 13
- 14
- 15
- 16
- 17

What year in school are you in?

- 7th grade
- 8th grade
- 9th grade (or freshman in high school)
- 10th grade (or sophomore in high school)
- 11th grade (or junior in high school)
- 12th grade (or senior in high school)
- Other (please specify: _____)

Which gender do you identify with?

- Female
- Male
- Transgender Female
- Transgender Male
- Gender non-binary
- Not listed (please specify: _____)
- Prefer not to answer

Survey Continued on Next Page

What race/ethnicity do you identify with? Please select all that apply.

- Hispanic or Latino
- White
- Black or African American
- Native American, American Indian, Alaska Native
- Asian
- Pacific Islander
- Other (please specify: _____)
- Prefer not to answer

How far did your mother get in school?

- Did not finish high school
- Graduated from high school or GED
- Had some college or technical training after high school
- Graduated from a 4-year college
- Earned an advanced graduate degree
- Don't know
- Does not apply

Who did you live with most of the time in the last 30 days?

- Parent(s), step-parent(s), or legal guardian
- Relatives like a grandparent, an aunt, an older brother - but NOT your parents
- Foster care parent(s)
- Adults who are NOT your parents or relatives
- Friends of yours with no adults present
- On your own
- Other

Survey Continued on Next Page

Do you receive free or reduced price lunches at school?

- Yes
- No
- Not Sure

How long have you lived in your neighborhood? _____

How many people live in your household? _____

Thank you!

Appendix F. Codebook

Availability: adequacy of supply of healthy food (e.g., number of places to purchase produce and presence of certain types of restaurants in neighborhoods)		
Code Name	Definition	Example
1. Food perceived as available	Participant notes that they think food is available in their neighborhood; doesn't think access to food is an issue in their community	
2. Food not perceived as available	Participant notes that they do NOT think food is available in their neighborhood; thinks access to food is an issue in their community	
Accessibility/Convenience: geographic location of food supply and ease of getting to that location		
Code Name	Definition	Example
3. Travel to Food Stores	Participant describes traveling to food stores	
3.1 Travel time	Participant describes the time it takes to get to the food retailer	
3.2 Transportation Mode	Participant describes transportation to/from food stores	e.g., car, bus, walk
3.3 Proximity	Distance (includes proximity to school)	
3.4 Frequency	Shopping frequency (e.g., a lot, often, number of times per month/week)	includes going to fast food restaurants
3.5 Barriers	e.g., geographical barriers, such as walking down and up the hill with groceries	
Affordability: food prices, people's perception of worth relative to food cost and ability to pay for food that is available		
Code Name	Definition	Example
4. Cost	Participant discusses cost of food (also other associated costs e.g., gas)	
4.1 Cost: Non-prohibitive	Participant indicates price or cost of food is non-prohibitive or not a factor influencing where participant shops	
4.2 Cost: Prohibitive or Influential	Participant references price of food as prohibitive or as a factor influencing where participants shops (do not code if reference not having enough money, generally, for food)	e.g., says food at a certain store is expensive
5. Food Assistance Programs	Use the general code if mention food assistance but not refer to using or not using specifically (or in reference to others' use)	e.g., SNAP, WIC, Food Bank
5.1 Use	Participant's family uses food assistance programs	
5.2 No Use	Participant's family doesn't use food assistance programs (only code if they don't use any food assistance programs)	
5.3 Positive Attitudes	Participant has positive attitudes about food assistance programs	
5.4 Stigma	Participant refers to stigma around food assistance programs	

Accommodation: how well food sources recognize and adapt to residents' needs (e.g., store hours, types of payment accepted, culturally relevant food)

Code Name	Definition	Example
6. Store Hours	Participant specifically comments on how stores either adapt to residents needs or not	e.g., mention stores aren't open long enough
7. Types of Payments Accepted	Participant discusses types of payment accepted at particular stores (or lack thereof)	
8. Culturally Relevant Food	relevant and recognizable culturally appropriate food (referring to a specific store or food a store carries)	e.g., going to Chinatown to get food, going to Owajimaya to get food
9. Medical/Health	Stores (including schools) have options for certain diets or food choices	e.g., lactose intolerant...
10. Multiple stores	participants mention going to or shopping at multiple stores	

Acceptability: attitudes regarding local food environment and whether the supply of products meets personal standards

Code Name	Definition	Example
11. Quality	Participant discusses quality of food wherever they're getting food (stores, school...)	
12. Quantity	Participant discusses whether food is available in appropriate quantities (includes when stores are out of stock of food) (excludes references to number of stores or stuff)	

Neighborhood Level: Areas for Improvement and Changes over Time

Code Name	Definition	Example
13. Transportation	Participant discusses transportation in neighborhood as an area to change/improve	
14. Youth & Children activities	Participant discusses more resources or programs for youth activities	
15. Shopping Options	Participant discusses increasing number of stores or store hours (specifically discusses a desired change)	
16. Changes Over Time	Participant discusses whether access to food is easier or harder than when participant first moved to neighborhood	e.g., mentions both easier and harder changes over time
16.1 Easier/Same	Participant perceives food access to have gotten easier or stayed the same over time	
16.2 Harder	Participant perceives food access to have gotten harder over time	
17. Neighborhood Strengths	Participant's perceived neighborhood strengths/what the participant likes about the neighborhood	e.g., strong sense of community
18. Neighborhood Challenges	Participant describes other perceived challenges in their neighborhood	e.g., housing prices

Other

Code Name	Definition	Example
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19. Eating Behaviors	only code if specifically mentions eating at home, at school, or eating out (include if mentioned in the question)	
19.1 At home	What they eat at home	
19.2 At school	What they eat specifically at school (does not include eating off campus during lunch - that would be 19.3), includes if they bring food from home	
19.3 Outside Home & school	What they eat outside of school or home	
20. Food Tradition		
20.1 Typical Meals	participant discusses food they eat regularly (don't code favorite foods unless they say they eat them all the time)	e.g., participant says they have something every two weeks or every week
20.2 Special Occasions	participant discusses food they eat for special occasions	e.g., traditional events, holidays, parties...
20.3 Participant cooks	participant mentions that they themselves cook	
21. Inclusion of Youth Voice	Apply general code if neutral	
21.1 Important	Participant thinks including the youth voice in the conversation is important	
21.2 Not important	Participant does NOT think its important to include the youth voice in the conversation	
22. Other	may encompass answers from the last question	e.g., storing food, nothing would change because of values