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Convenience and corner store fruit and vegetable access: attitudes and intentions among Colorado adults, 2014

Katherine A. James[1], **Renee Calanan**[2,3], **Francesca Macaluso**[1], **Yaqiang Li**[1], **Arnold H. Levinson**[1]

[1]School of Public Health, University of Colorado Anschutz Medical Campus, 13001 E 17th PL, MS B119, Bldg 500 3rd FLR, Aurora, CO 80045, USA

[2]Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, USA

[3]Present address: National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Highway NE, Atlanta, GA 30341, USA

Abstract

Aim—The term *food desert* generally refers to areas where healthy food options, such as fresh fruits and vegetables, are unavailable within a certain number of miles. However, other factors besides distance may affect the ability to purchase healthier foods. The goal of this study was to understand Colorado adults' perceptions of their access to healthy food options and to assess how other structural and socio-demographic factors may affect that access.

Subject and methods—Colorado adults were asked questions about self-reported access to healthy food, likelihood of buying fresh fruits and vegetables from convenience/corner stores if available, perceived characteristics of fruits and vegetables available for purchase near respondents' residence, and demographics.

Results—A majority of Colorado adults in 2013–14 reported wanting fresh fruits and vegetables to be more available, more varied, higher quality, and/or less expensive. Socioeconomic status, race/ethnicity, and regular shopping habits were significantly associated with reported likelihood of purchasing fruits and vegetables from a convenience/corner store if available.

Conclusion—Factors other than proximity to a grocery store affect Colorado adults' perceived access to healthy food options and should be considered in the development and implementation of public health programs and policies geared toward improving healthy food access.

✉Katherine A. James, Kathy.James@cuanschutz.edu.

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Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent was obtained from each participant prior to study activities in both the parent study and as part of the survey registry.

Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Keywords

Food desert; Health equity; Public health policy; Perceptions of food access; Healthy communities

Introduction

Obesity currently affects 90 million American adults and children (Trogdon et al. 2012), carrying with it long-term implications for chronic disease risk (Krukowski et al. 2013). Efforts to understand increasing rates of obesity have generally focused on individual health risk behaviors, health care provider engagement, and school and work programming (Middleton et al. 2013). However, obesity is also associated with factors in the built environment, including access to green space, local violence and crime, and transportation, which in turn affect access to healthy food choices such as fruit and vegetables (F&V) (Garfinkel-Castro et al. 2017; Xu et al. 2015; Mayne et al. 2015).

Some studies report a positive link between grocery store proximity and healthy eating (Jetter and Cassady 2006; Larson et al. 2009; Blitstein et al. 2012; Rose and Richards 2004; Aggarwal et al. 2014), while other studies report no association or a negative association (Pearson et al. 2005; Casagrande et al. 2011; Ghosh-Dastidar et al. 2014). Low-income US neighborhoods have 30% fewer supermarkets than the highest-income neighborhoods (Weinberg 1995), and rural and low-income urban areas are less likely to have affordable transportation (Rose and Richards 2004; Weinberg 1995). Additionally, individuals may face unsafe walking conditions or constraints on time due to work schedules or single parenthood that prevent accessing grocery store (Rose and Richards 2004). Such barriers are not reflected in the US *food desert* definition, which is based solely on distance: more than a half-mile from the nearest supermarket in urban areas, and more than 10 miles in rural areas (USDA ERS n.d.).

Convenience and corner (C/C) stores are more common than supermarkets in rural and low-income urban areas (Morland et al. 2002; Moore and Diez Roux 2006) and thus may offer an avenue for increasing access to healthy food in these areas (Bustillos et al. 2009). While research to date has found many C/C stores to fall short in F&V quality, quantity, and pricing (Bustillos et al. 2009; Morland and Evenson 2009; Powell et al. 2007; Zenk et al. 2006), public programs and policies may help bridge this gap. North Carolina's Healthy Food Small Retailer Act H.R. 250 (2015) and the Washington D.C. Health Corners Program have allocated money to cover setup fees for F&V retail in convenience stores (Carman 2011).

The purpose of the current study was to understand how Colorado adults perceive their access to healthy F&V; to compare structural and socio-demographic barriers with *food desert* definitions based solely on proximity, and to estimate potential interest in buying healthy F&V from C/C stores. Results can inform local and state policy makers of the potential for policies to promote fresh F&V purchasing through C/C stores.

Materials & methods

Study participants came from a survey-research registry of volunteers who were enrolled after completing a population-level survey of Colorado adults, the 2012 wave of The Attitudes and Behavior Survey (TABS) on Health. More than half (58%) of TABS 2012 respondents joined the registry. Accepters and decliners were similar in sex, prevalence of self-reported diabetes or high blood pressure, body mass index (BMI), and smoking status. Registry members were more likely than decliners to be white (82.4% vs. 75.7%), aged 45–64 (43.3% vs. 35.2%), college graduates (46.0% vs. 38.0%), and to have income at or above 200% of the federal poverty level (63.1% vs. 42.7%). Further details have been reported elsewhere (James et al. 2018).

For the current study, interviews were attempted with 5819 randomly selected registry members, including oversamples of nonwhite groups, young adults aged 18–24, those who reported a diagnosis of diabetes or high blood pressure, and those with low socioeconomic status (SES) defined as uninsured, income <200% Federal Poverty Level, no high school diploma (may have GED), and/or disabled/unable to work. Participants were surveyed through their preferred mode (email, postal mail, or telephone) and completed the questionnaire on paper, online, or by telephone interview in English or Spanish. A total of 3974 participants completed interviews (73.8% response rate) between December 2013 and April 2014.

Study measures included demographics, self-reported access to healthy food, likelihood of buying fresh F&V from C/C stores if available, and perceived characteristics of F&V available for purchase near respondents' residence. A binary variable was constructed to compare respondents who strongly or somewhat endorsed any desired improvement to F&V (more available, higher quality, larger variety, lower cost) vs. respondents who strongly or somewhat disagreed with all potential-improvement statements.

Urban, rural, and frontier classifications were based on Colorado Rural Health Center county designations and self-reported county of residence. Food desert residence (nearest supermarket >0.5 miles for urban residents and >10 miles for rural residents) was self-reported.

Analyses used survey design-adjusted methods in SAS version 9.3, and data were weighted to account for sampling probability, non-response, and calibration of the sample to the Colorado adult population. Basic frequencies and cross-tabulations were calculated to evaluate differences between groups. Logistic regression was used to evaluate the association between access to healthy food and structural and socio-demographic characteristics, such as SES, distance from the nearest supermarket, physical limitations, age, race/ethnicity, and access to consistent transportation. Logistic regression was also used to evaluate whether individuals who reported having difficulty accessing a supermarket (responded 'disagree' or 'strongly disagree' to the statement "It is easy for me to get to a supermarket or grocery store,") would purchase F&V from C/C stores if available, controlling for demographic factors. Results are approximately unbiased estimates for the Colorado adult population during the study period.

Results

Urban residents

Urban residents made up approximately 66.7% of the study population (Table 1). About half of urban participants were under age 45 (46.5%). Urban participants were primarily non-Hispanic whites (71.6%), and a majority (63.1%) did not have low socioeconomic status. Most urban participants lived within 0.5 miles of a grocery store or supermarket (68.4%) and did not report difficulty getting to a grocery store or supermarket (95.3%). Most residents purchased chips, candy, or other sweets from a convenience/corner store less than one time per week (90.1%).

Most urban participants wished F&V were more available, higher quality, more varied, or cost less in their area. Wishing for F&V improvements was more common among Hispanics/Latinos (93.7%, CI: 90.0, 97.5) vs. non-Hispanic whites (83.4%, CI: 80.9, 85.9); low SES adults (92.9%, CI: 90.3, 95.5) vs. non-low SES adults (81.6%, CI: 78.7, 84.5); SNAP participants (95.0%, CI: 90.8, 99.2) vs. non-participants (84.9%, CI: 82.7, 87.1); adults with difficulty getting to the grocery store/supermarket (94.4%, CI: 90.4, 98.4) vs. those without difficulty (85.6%, CI: 83.5, 87.7); and C/C store customers who bought chips, candy, or other sweets at least weekly (95.3%, CI: 90.9, 99.8) vs. less than weekly (85.0%, CI: 82.8, 87.1).

If fresh F&V were available from C/C stores, willingness to buy F&V there was more common among urban adults aged 20–29 (46.9%, CI: 38.8, 55.0) than other age groups (≤32.0%); with low SES (52.8%, CI: 47.3, 58.3) vs. non-low SES (22.1%, CI: 18.8, 25.3); SNAP participants (64.6%, CI: 54.9, 74.3) vs. non-participants (29.9%, CI: 26.9, 33.0); adults with difficulty getting to the grocery store/supermarket (53.1%, CI: 39.1, 67.2) vs. those without difficulty (32.6%, CI: 29.6, 35.6); and C/C store customers who bought chips, candy, or other sweets at least weekly (61.4%, CI: 50.8, 71.9) vs. less than weekly (30.6%, CI: 27.5, 33.6). Non-Hispanic whites were less likely (27.8% CI: 24.5, 31.1) than Hispanics/Latinos (49.2%, CI: 41.5, 56.9) to be willing to buy fresh F&V from a C/C store if available.

Rural residents

One-third of the study population lived in a rural or frontier area (33.3%) (Table 2). A majority of rural adults wished that F&V were more available, of a higher quality, of a greater variety, or cost less in their area. Wishing for these improvements was more common among Hispanics/Latinos (96.6%, CI: 91.9, 100.0) vs. non-Hispanic whites (88.0%, CI: 84.3, 91.8); adults with low SES (95.0%, CI: 91.9, 98.1) vs. non-low SES (85.4%, CI: 80.3, 90.5); and those with difficulty getting to a grocery store/supermarket (97.2%, CI: 94.9, 99.5) vs. without diffuclty (88.9%, CI: 85.4, 92.3).

If F&V were available from a C/C store, willingness to buy there was more common among Hispanics/Latinos (67.9%, CI: 55.8, 80.1) vs. non-Hispanic whites (37.5%, CI: 31.6, 43.3); adults with low SES (47.6%, CI: 40.0, 55.2) vs. non-low SES (32.0, CI: 24.4, 39.6); residents living >10 miles from the closest grocery store/supermarket (55.2%, CI: 42.2, 68.3) vs. ≤10 miles (34.2%, CI: 27.3, 41.1).

Difficulty with grocery store/supermarket access

In urban areas, physical proximity to a grocery store/supermarket was not a significant predictor of difficulty accessing a grocery store/supermarket, but several other factors were associated with difficult supermarket access: low SES (OR: 3.0, CI: 1.5, 6.1), physical limitations (OR: 2.3, CI: 1.2, 4.6), and female gender (OR: 2.0, CI: 1.0, 4.0) (Table 3). Urban residents who could not walk or drive to the grocery store/supermarket were more likely to report difficulty getting to a supermarket than those who could (OR: 4.6, CI: 1.6, 13.4). In rural areas, distance was the only significant predictor of reported difficulty getting to the supermarket; rural residents who lived >10 miles from a grocery store/supermarket were three times more likely to report difficulty getting to a supermarket (OR: 3.1, CL: 1.5, 6.3) than those who did live within 10 miles of a grocery store/ supermarket.

In urban areas, reported difficulty getting to the grocery store was associated with greater odds of being likely to purchase F&V from a C/C store (OR 2.1, 95% CI: 1.1, 4.2) after controlling for other demographic factors (Table 4). In both urban and rural areas, two factors were associated with greater odds of being likely to purchase F&V from a C/C store: low SES (urban OR: 3.1, 95% CI: 2.3, 4.2; rural OR: 1.7, CI: 1.1, 2.8), and race/ethnicity. In urban areas, African American/Black adults were more likely to purchase F&V from a C/C store (OR: 3.0, CI: 1.6, 5.6). In rural areas, Hispanic/Latino adults were more likely to purchase F&V from a C/C store (OR: 3.6, CI: 1.8, 6.8). In urban areas, adults who purchased chips, candy, or other sweets from a C/C store at least once per week were more likely to purchase F&V from a C/C store (urban OR: 2.9, CI: 1.7, 4.9).

Discussion

A majority of Colorado adults in 2013–14 reported wanting fresh fruits and vegetables to be more available, more varied, higher quality, and/or less expensive. These desires were reported by majorities in all age groups, races/ethnicities, SES groups; across urban, rural, and frontier areas of residence, and regardless of residence within or outside a self-reported food desert. These results show an opportunity for policy makers to respond to universally widespread demand for access to affordable healthy food of high quality.

Proximity-defined *food desert* status incompletely reflects difficulty with access to fresh fruit and vegetables, particularly in low-income urban areas, and the definition may need to be enhanced. In rural areas, living more than 10 miles from a grocery store/supermarket predicted difficulty in accessing fresh F&V – in fact, distance was the only assessed factor that was significantly predictive. However, in low-income urban areas, several factors predicted difficulty with healthy food access but proximity to the closest grocery store/ supermarket did not. These factors included low SES, as seen in other studies (Bustillos et al. 2009; Morland et al. 2002), as well as transportation, physical limitations, and female sex. Individuals who could not walk or drive to the grocery store were more likely to report difficulty getting to the supermarket; this finding may indicate the need for adjustments in cost or availability of existing public transit systems to better serve Colorado adults.

Likelihood of purchasing F&V from a C/C store if available was most common across urban and rural areas among adults with low SES, regular C/C shoppers for other items, and some

nonwhite ethnic groups (with different groups in urban vs. rural areas). Only in urban areas was difficulty getting to the supermarket a factor in willingness to purchase F&V from a C/C store. C/C stores with established high volumes of customers may be promising targets for healthy food purchasing programs, and these programs should consider sociodemographic characteristics in an area when designing programs.

A majority of adults reported good access to supermarkets but also called for improved F&V quality, variety, and availability in their neighborhoods. Policies that seek to remedy a lack of access to healthy food choices should not ignore areas with existing grocery stores but should consider the quality and variety of food choices already available.

Our results highlight potential opportunities for synergy and collaboration to improve healthy food access. In contrast to previous studies, where C/C storeowners cited lack of demand as a key reason for not offering healthier options (Gravlee et al. 2014), our findings suggest ample demand from minority and low SES populations, as well as SNAP participants in urban areas. These results may help persuade C/C storeowners to work with public health officials and policy makers to increase fresh F&V availability and identify areas where these changes would have high impact.

Limitations

Although data were calibrated to the Colorado adult population in 2013–14, survey respondents may have differed from non-respondents in unmeasured ways. Current results do not represent people without telephones, who did not speak English or Spanish, or were institutionalized. Small sample sizes for some subpopulations reduced precision of some estimates, increasing the possibility that true differences were not statistically detectable.

This survey was conducted from December to April, winter months when certain fresh produce may be less available in general. During summer months, farmers' markets and community gardens may offer increased access to and affordability of certain fruit and vegetable items, resulting in a positive effect on perceptions of access to high quality F&V as compared to the winter. However, the factors significantly associated with these attitudes in this study, such as race/ethnicity, SES, and reported difficulty getting to a supermarket/grocery store, are not seasonally related and are unlikely to be influenced by the study time period.

Conclusion

Colorado adults have generally high levels of access to food retailers and to fresh produce, but a majority is dissatisfied with quality, variety, availability, and/or cost of fresh produce. Large proportions of certain demographic groups would purchase fresh F&V from C/C stores, especially if such produce were more available. Our findings have implications for public policy decision-making around food access; small food-retailer programs that encourage or require F&V sales in convenience stores may have greater impact if they consider unique community characteristics such as urban/rural classification, SES, access to transportation, and racial/ethnic make-up.

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Research involving human participants

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Colorado Multiple Institutional Review Board (COMIRB) prior to study activities (#05-0785).

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Table 1

Demographic characteristics and attitudes about fruit and vegetable access in urban communities, Colorado, 2013–14

Characteristic	Population percent (95% CI)	Percent (95% CI) who wish for F&V improvements[a]	Percent (95% CI) who are likely to buy F&V at C/C if available
Urban residence (N = 2644, 66.7%)			
Age			
20–29	20.2 (17.4, 23.0)	91.7 (87.2, 96.3)	46.9 (38.8, 55.0) *
30–44	26.3 (23.3, 29.2)	92.4 (88.8, 95.9)	32.0 (25.6, 38.5)
45–64	35.3 (32.4, 38.1)	89.6 (86.8, 92.3)	31.3 (26.9,35.8)
65+	18.3 (16.4, 20.2)	85.9 (82.5, 89.4)	25.5 (21.1,30.0)
Race/ethnicity			
White non-Hispanic	71.6 (68.8, 74.5)	83.4 (80.9, 85.9)	27.8 (24.5,31.1) *
Hispanic/Latino	18.3 (15.8, 20.8)	93.7 (90.0, 97.5)	49.2 (41.5, 56.9)
Black/African American non-Hispanic	4.8 (3.5, 6.2)	91.1 (81.8, 100.0)	58.7 (44.5, 73.0)
Other race non-Hispanic	5.2 (3.8, 6.6)	89.1 (80.5, 97.8)	34.4 (20.9, 47.9)
Sex			
Male	49.9 (46.8, 53.0)	86.8 (83.9, 89.8)	32.2 (27.8, 36.5)
Female	50.1 (47.0, 53.2)	85.1 (82.4, 87.9)	35.0 (31.0,39.0)
Socioeconomic status (SES)			
Low SES	36.9 (33.7, 40.0)	92.9 (90.3, 95.5) *	52.8 (47.3, 58.3) *
Non-Low SES	63.1 (60.0, 66.3)	81.6 (78.7, 84.5)	22.1 (18.8,25.3)
SNAP[b] participant			
Yes	9.5 (7.6, 11.3)	95.0 (90.8, 99.2) *	64.6 (54.9, 74.3) *
No	90.5 (88.7, 92.4)	84.9 (82.7, 87.1)	29.9 (26.9, 33.0)
Proximity to grocery store/supermarket			
<=0.5 miles	68.4 (65.6, 71.2)	86.8 (84.3, 89.2)	35.3 (31.6,39.0)
>0.5 miles	31.6 (28.8, 34.4)	84.5 (80.9, 88.1)	30.1 (25.1,35.2)
Reported difficulty getting to grocery store/supermarket			
Yes	4.7 (3.4, 6.0)	94.4 (90.4, 98.4) *	53.1 (39.1,67.2) *
No	95.3 (94.0, 96.6)	85.6 (83.5, 87.7)	32.6 (29.6, 35.6)
Purchase sweets at C/C			

Characteristic	Population percent (95% CI)	Percent (95% CI) who wish for F&V improvements[a]	Percent (95% CI) who are likely to buy F&V at C/C if available
< Once per week	90.1 (88.1,92.1)	85.0 (82.8, 87.1)	30.6 (27.5, 33.6)
Once per week or more	9.9 (7.9, 11.9)	95.3 (90.9, 99.8) *	61.4 (50.8,71.9) *

[a] "Agree" or "Strongly agree" that they wish F&V were more available, of higher quality, of a greater variety, or cost less

[b] SNAP = Supplemental Nutrition Assistance Program

* difference from other category(ies), $p < 0.05$

Table 2

Demographic characteristics and attitudes about fruit and vegetable access in rural communities, Colorado, 2013–14

Characteristic	Population percent (95% CI)	Percent (95% CI) who wish for F&V improvements[a]	Percent (95% CI) who are likely to buy F&V at C/C if available
Rural residence (N = 1322, 33.3%)			
Age			
20–29	23.3 (17.9, 28.6)	97.9 (94.6, 100.0)	45.4 (31.2, 59.5)
30–44	31.3 (25.9, 36.6)	96.4 (92.4, 100.0)	48.7 (37.7, 59.7)
45–64	29.8 (25.5, 34.0)	95.1 (91.7, 98.4)	35.7 (28.5, 42.9)
65+	15.7 (13.1, 18.3)	91.2 (87.4, 95.0)	35.2 (27.8, 42.5)
Race/ethnicity			
White, non-Hispanic	78.3 (73.8, 82.8)	88.0 (84.3, 91.8)	37.5 (31.6,43.3)
Hispanic/Latino	16.7 (12.5,20.8)	96.6 (91.9, 100.0)	67.9 (55.8, 80.1) *
Black/African American, non-Hispanic	0.20 (0.00, 0.43)	74.0 (12.7, 100.0)	10.2 (0.0, 38.6)
Other race, non-Hispanic	4.8 (2.6, 7.1)	96.0 (91.1, 100.0)	35.8 (5.4, 46.2)
Sex			
Male	50.2 (44.9, 55.6)	90.4 (86.0, 94.8)	42.9 (35.0, 50.8)
Female	49.8 (44.4, 55.1)	89.2 (84.9, 93.5)	40.9 (33.8,48.1)
Socioeconomic status (SES)			
Low SES	55.3 (49.9, 60.8)	95.0 (91.9, 98.1) *	47.6 (40.0, 55.2) *
Non-Low SES	44.7 (39.2, 50.1)	85.4 (80.3, 90.5)	32.0 (24.4, 39.6)
SNAP[b] participant			
Yes	15.4 (11.1, 19.7)	92.3 (83.1, 100.0)	51.8 (36.2, 67.5)
No	84.6 (80.3, 88.9)	89.3 (86.0, 92.6)	39.7 (34.1,45.3)
Proximity to grocery store/supermarket			
<=10 miles	76.5 (71.1, 81.9)	86.0 (80.9, 91.2)	34.2 (27.3,41.1)
>10 miles	23.5 (18.1,28.9)	93.0 (86.8, 99.3)	55.2 (42.2, 68.3) *
Reported difficulty getting to grocery store/supermarket			
Yes	11.2 (8.1, 14.2)	97.2 (94.9, 99.5) *	45.9 (31.4, 60.4)
No	88.8 (85.8, 91.9)	88.9 (85.4, 92.3)	41.4 (35.7,47.1)
Purchase sweets at C/C			

Characteristic	Population percent (95% CI)	Percent (95% CI) who wish for F&V improvements[a]	Percent (95% CI) who are likely to buy F&V at C/C if available
< Once per week	83.0 (78.5, 87.5)	88.7 (85.3, 92.1)	38.6 (33.0, 44.2)
Once per week or more	17.0 (12.5,21.5)	95.1 (88.1, 100.0)	58.7 (43.8, 73.5)

[a]"Agree" or "Strongly agree" that they wish F&V were more available, of higher quality, of a greater variety, or cost less

[b]SNAP = Supplemental Nutrition Assistance Program

*difference from other category(ies), $p < 0.05$

Table 3

Associations between difficulty traveling to grocery store[a] and socio-demographic factors, stratified by urban/rural residence, Colorado, 2013–14

	Urban residence	Rural residence
Characteristic	Odds ratio (95% CI[b])	
Age		
20–29	1.0 (ref.)	1.0 (ref.)
30–44	1.5 (0.3, 7.5)	0.7 (0.2, 3.5)
45–64	2.5 (0.6, 10.5)	2.1 (0.5, 9.5)
65+	3.1 (0.6, 16.1)	1.9 (0.4, 8.0)
Race/ethnicity		
White, non-Hispanic	1.0 (ref.)	1.0 (ref.)
Hispanic	1.6 (0.7, 3.5)	1.6 (0.5, 5.5)
Black/African American, non-Hispanic	0.4 (0.1, 2.3)	0.7 (0.05, 10.2)
Other race, non-Hispanic	1.5 (0.5, 4.4)	1.9 (0.6, 6.3)
Sex		
Male	1.0 (ref.)	1.0 (ref.)
Female	2.0 (1.0, 4.0)*	0.6 (0.3, 1.1)
Socioeconomic status		
Non-Low	1.0 (ref.)	1.0 (ref.)
Low	3.0 (1.5, 6.1)*	0.6 (0.3, 1.4)
Proximity to grocery store		
<=0.5 miles (urban)	1.0 (ref.)	-
>0.5 miles (urban)	1.5 (0.8, 2.8)	-
<= 10 miles (rural)	-	1.0 (ref.)
> 10 miles (rural)	-	3.1 (1.5, 6.3)*
Physical limitations		
No	1.0 (ref.)	1.0 (ref.)
Yes	2.3 (1.2, 4.6)*	1.6 (0.8, 3.3)
Transportation		
Can walk or drive to grocery store	1.0 (ref.)	1.0 (ref)
Use other form of transportation	4.6 (1.6, 13.4)*	2.3 (0.3, 15.6)

[a] 'Disagree' or 'Strongly disagree' that "It is easy for me to get to a supermarket or grocery store"

[b] CI = Confidence Interval

* $p < 0.05$

Table 4

The Association between likelihood to purchase F&V from a convenience/corner store and socio-demographic factors stratified by urban/rural residence, Colorado, 2013–14

	Urban residence	Rural residence
Characteristic	Odds ratio (95% CI [*])	Odds ratio (95% CI[a])
Age		
20–29	1.0 (ref.)	1.0 (ref.)
30–44	0.7 (0.5, 1.1)	1.0 (0.4, 2.1)
45–64	0.9 (0.6, 1.4)	0.7 (0.4, 1.5)
65+	0.9 (0.6, 1.5)	0.9 (0.5, 1.9)
Race/ethnicity		
White, non-Hispanic	1.0 (ref)	1.0 (ref.)
Hispanic	1.5 (1.0, 2.1)	3.6 (1.8, 6.8) [*]
Black/African American, non-Hispanic	3.0 (1.6, 5.6) [*]	0.1 (0.01, 1.9)
Other race, non-Hispanic	1.0 (0.5, 1.8)	0.5 (0.2, 1.5)
Sex		
Male	1.0 (ref.)	1.0 (ref.)
Female	1.1 (0.8, 1.5)	0.9 (0.6, 1.5)
Socioeconomic status		
Non-Low	1.0 (ref.)	1.0 (ref.)
Low	3.1 (2.3, 4.2) [*]	1.7 (1.1, 2.8) [*]
Difficulty getting to the grocery store		
No	1.0 (ref.)	1.0 (ref.)
Yes	2.1 (1.1, 4.2) [*]	1.2 (0.6, 2.1)
Purchase sweets at C/C		
< Once per week	1.0 (ref.)	1.0 (ref.)
Once per week or more	2.9 (1.7, 4.9) [*]	2.0 (0.9, 4.2)

[a] CI = Confidence interval

[*] $p < 0.05$