Supplemental Table 2. Survey and Interview Research with Rural Residents and Environments for BF, HE, and PA Promotion in Rural Settings (n=159).

		Source			Behavior			Results
First Author, Year	Citation in AMA format	Population Characteristics	Data Collection Measure/Method	Setting(s)	BF	HE	PA	Environment
Abi Nader et al., 2018	Abi Nader P, Hilberg E, Schuna JM, John DH, Gunter KB. Teacher-level factors, classroom physical activity opportunities, and children's physical activity levels. *J Phys Act Health.* 2018;15(9):637-643.	6 rural communities (1 school of each community); 3 intervention (684 students) and 3 control (563 students). Total 1247 students; 640 boys, 607 girls; 200 in 1st grade, 221 in 2nd grade, 232 in 3rd grade, 251 in 4th grade, 260 in 5th grade, 83 in 6th grade.	26-item adapted Balanced Energy PA (BEPA) Toolkit Teacher questionnaire based on the social cognitive theory that includes value for PA, self-efficacy associated with using the BEPA Toolkit, BEPA Toolkit access, use, and training, school operating conditions (e.g, academic expectations, schedule), school situational support (e.g., administrative support, classroom space), and teacher demographics; Walk4Life pedometers to measure children's PA at school.	Schools			**X**	Very few teachers reported using toolkit methods but did report using other classroom-based PA methods like Go Noodle, Descries, and Adventure to Fitness. Teachers indicated that class size, academic expectations, and school schedule were correlated to school support for PA.
Addy et al., 2004	Addy CL, Wilson DK, Kirtland KA, Ainsworth BE, Sharpe P, Kimsey D. Associations of perceived social and physical environmental supports with physical activity and walking behavior. *Am J Public Health.* 2004;94(3):440-443.	473 male (43.7%), 721 females (56.3%); 630 attended some college or technical school (54.3%), 551 had high school diploma or less (45.7%), 13 data missing; 477 African American (41%), 687 White (59%), 30 Other/data missing	Telephone- based survey developed from extensive literature review, expert input, and community focus groups; Questions addressed perceived supports and barriers of PA in the neighborhood; perceived supports and barriers of PA in the community. Supports included walking/bike trails, swimming pools, recreation facilities, parks, playgrounds, sports fields, schools, malls, places of worship, and waterways. Barriers included crime and safety concerns associated with recreation facilities.	Churches; parks; playgrounds; recreation facilities; schools streets			**X**	Better street lighting, trust of neighbors, use of private recreation facilities, parks, playgrounds, sport fields, schools and worship facilities were associated with increased PA. Having physically active neighbors and sidewalks available in the neighborhood were associated with increased walking behaviors.
Ahmed et al., 2011	Ahmed AT, Oshiro CE, Loharuka S, Novotny R. Perceptions of	9 educators (2 administrators, 4 teachers, and 3 garden staff)	Semi structured interviews explored: (1) definitions of children's health, (2) health consequences of obesity, (3)	Schools; community gardens		**X**	**X**	Perceived benefits of school-based gardening included improving children's diet, engaging children in PA,

	middle school educators in Hawai'i about school-based gardening and child health. *Hawaii Med J.* 2011;70(7 Suppl 1):11-15.		challenges to improving children's nutrition and health, and (4) effects of school gardening on children's health and development.				creating a link to local tradition, mitigating hunger, and improving social skills. Poverty was cited as a barrier to adoption of HE habits. Seven respondents believed that school gardens increase kids' willingness to try new foods and improves children's diet.
Ahmed et al., 2018	Ahmed S, Byker Shanks C, Smith T, Shanks J. Fruit and vegetable desirability is lower in more rural built food environments of Montana, USA using the Produce Desirability (ProDes) Tool. *Food Secur.* 2018;10(1):169-182.	12 grocery stores (11 urban and rural communities);, 89% held at least a high school degree, 92% were non-Hispanic white	Produce Desirability Tool (ProDes) – a paper and pencil or web-based consumer survey to assess the overall desirability, visual appeal, touch and firmness, aroma, and size of the most consumed fruits and vegetables. Nutrition Environment Measurement Scores for Stores (NEMS-S), and price were also collected.	Food retail		**X**		The mean Total ProDes scores for each of the individual produce items ranged from 3.2 to 4.1 with green sweet bell peppers having the lowest scores and Red Delicious apples having the highest scores. Comparisons for all pairs using Tukey-Kramer HSD found significant differences in the means of Total ProDes scores of produce purchased from stores in a metro county (RUCC of 3) in comparison to communities that are rural (RUCC of 7, 8, or 9). The same pattern (Fig. 3) was observed across four of the five observational sensory measures evaluated by the ProDes Tool for overall desirability ($p = 0.002$), visual appeal ($p = 0.003$), touch and firmness ($p = 0.011$), and size ($p < 0.0001$).
Alexander, 2015	Alexander DS, Alfonso ML, Hansen AR. Childhood obesity perceptions among African American caregivers in a rural Georgia community: a mixed methods	135 survey respondents; 96% female, 3.7% male; 38 % reported the highest education level as some college or an associate degree, 9.9% less than high school; 9.1% some	Survey developed with 59 questions (within 5 sections) on perceptions of risk factors, child's weight status, features of the built environment, importance of obesity prevention strategies, and demographics. Interview guide also developed: 14-item, open-	Food retail; parks; recreation facilities; schools	**X**	**X**	Interviewees described the three stores found in their community and stated they had access to fresh fruits and vegetables, yet the produce is expensive. Interviewees also commented on the convenience of fast-food restaurants. Many interviewees described the county and their

	approach. *J Community Health.* 2015;40(2):367-378.	high school, 22.7% high school or GED, 7.6% received 4-year college degree, 12.9% has some graduate education or completed degree. 12 interview participants; 91.7% female, 8.3% male; 8.3% less than high school, 8.3% some high school, 16.7% high school or GED, 41.7% some college or an associate degree, 8.3% received 4-year college degree, 16.7% had some graduate education or completed degree; All were Black or African American	ended interview guide mirrored the five sections of the survey.				community as having insufficient resources for child activity. The county has three parks and one recreational department, but interviewees stated that illegal activity occurred at the parks and strangers are usually present. Survey respondents agreed their child felt safe in their community (91 %) and safe communities encourage child PA (82 %). Interviewees asserted the school provided a supportive environment by establishing new nutritional standards such as not offering fried chicken and ice cream and providing more vegetables and fruits to students. Lack of PA opportunities in schools and expensive fees for activities outside of school were PA barriers.
Andress & Fitch, 2016	Andress L, Fitch C. Juggling the five dimensions of food access: Perceptions of rural low-income residents. *Appetite.* 2016;105:151-155.	6 focus groups include 30 women	Focus groups to assess women' perceptions about the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) program. Topic areas included grocery shopping habits, travel time and distance, food sources in the community, influences on eating and shopping behavior, PA, cooking habits, use of food assistance programs, and perceptions of healthful food.	Food assistance programs; food retail		**X**	Three main themes were identified from the focus groups: Topography and rural features of the region were identified as barriers to accessibility; income and household budget also served as barriers to healthy food access; and social and cultural environment in stores compromised food access because WIC participants observed how stores did not meet their needs. Data and prior literature, the pathways by which these environmental factors shape nutrition remain unclear-entangled - much like

							the issues that low income, rural residents must juggle when they make grocery shopping and nutrition decisions.
Armstrong, 2000	Armstrong D. A survey of community gardens in upstate New York: implications for health promotion and community development. *Health Place.* 2000;6(4):319-327.	20 community gardens coordinators; 63 gardens; 46% of the gardens were in low-income urban areas, 38% not located in low-income area; 30% of the gardeners African American, 25 -49% were minority gardeners, 35% Caucasian gardener.	Telephone interview to assess gardens and garden programs in neighborhoods, long-term use of garden land/sites, and surrounding neighborhoods.	Community gardens		**X**	**X**	Five (of 20 total) garden programs were in rural areas. All community garden programs in rural areas were operated with at least one paid staff and 1 rural program was operated by Cooperative Extension. Practice of traditional culture was cited as a reason for gardens in rural areas. Lack of access to land was cited as a barrier. Gardens in low-income neighborhoods (46%) were four times as likely as non-low-income gardens to lead to other issues in the neighborhood being addressed; reportedly due to organizing facilitated through the community gardens.
Aronson & Oman, 2004	Aronson RE, Oman RF. Views on exercise and physical activity among rural-dwelling senior citizens. *J Rural Health.* 2004;20(1):76-79.	26 senior citizens participated in 2 focus groups.	Focus groups to identify barriers and facilitators to PA that are context specific and barriers and facilitators that inform the health communication intervention strategies in regard to the older adults' perceptions of health, PA, exercise, and physical fitness.	Recreational facilities; streets			**X**	There were limited opportunities for indoor PA; participants reported mostly engaging in PA outdoors through walking, golfing, and swimming. Barriers identified for the outdoor environment included weather, traffic, safety/security, and dogs.
Askelson et al., 2015	Askelson N, Cornish D, Golembiewski E. Rural school food service director perceptions on voluntary school meal reforms. *JAFSCD.* 2015;6(1):65-75.	Telephone interview for 67 food service directors; online survey for 57 directors; 63% received some training or education after	Telephone interview that included knowledge, attitudes, and experiences with the Healthy Hunger Free Kids Act and voluntary reform programs. Online questionnaire that assessed respondents' professional responsibilities, training experiences,	Local food producers; schools		**X**		Barriers to participating in the programs included lack of resources needed for full engagement. Logistical issues reported included the lack of local growers in their area. Although rural school districts are often surrounded by corn or soybean farms, these crops are unfit for immediate

		high school; very few received any formal education after high school.	day-to-day programming operations, and professional networks.				consumption, and most respondents were unable to identify any local farmers growing crops that are viable for use in school meals. Facilitators reported included cost and time savings. For some directors, the local produce from farms or orchards was cheaper than items procured from their regular vendors. Another director reported that because the local producer was so close, deliveries could be made in 5 minutes.
Askelson et al., 2019	Askelson NM, Brady P, Ryan G, et al. Actively involving middle school students in the implementation of a pilot of a Behavioral Economics-Based Lunchroom Intervention in rural schools. *Health Promot Pract.* 2019;20(5):675-683.	6 food service directors from 5 rural schools and 1 urban school	Multicomponent evaluation with students and food service directors and staff including a lunchroom assessment, online surveys, production records, and interviews. Semi-structured telephone interviews with Food Service Directors included perceptions of the intervention, whether they thought the intervention was successful, what the outcomes were, and what their preferred training methods were. The goals of the intervention were to improve the lunchroom environment based on the principles of behavioral economics to promote healthy food choices and empower food service staff with the knowledge, skills, and ability to communicate about making healthy choices.	Schools		**X**		All participants described the intervention as successful, feasible and well received; however, they mentioned time and scheduling as challenges. The intervention improved the school lunchroom in five evidence-based areas that promote healthy food choices, as demonstrated by the changes that students chose to make in the lunchroom, increases in production of healthy food items, and interviews with food service directors. Food service directors specifically mentioned positive outcomes of focusing on milk placement, fresh fruit presentation, and signage.
Atkinson et al., 2007	Atkinson NL, Billing AS, Desmond SM, Gold RS, Tournas-Hardt A. Assessment of the nutrition and	146 respondents; 132 female 90.4%; 2 or 1.4% completed grades 1–8, 23 or 15.8% grades 9–11, 76 or	130 questions telephone survey that asks questions about attitudes and behaviors related to nutrition, PA, technology, and information seeking. Focus group questions included	Food assistance programs; food retail; recreation	**X**	**X**	Barriers to HE: little access to a vehicle or reliable public transportation. Emergency food pantries and banks have few healthy foods. Food Outlets used in the past week:

	physical activity education needs of low-income, rural mothers: can technology play a role? *J Community Health.* 2007;32(4):245-267.	52.1% completed grade 12 or GED, 36 or 24.7% had college 1–3 years, 2 or 1.4% had college 4 or more years; 7 or 4.8% were missing; 61% White, 30.1% African American	topics: places available in community for food shopping, how people cope with the problem of having enough food, types of opportunities in community for PA, where people get information on health and nutrition, access to computers for people in the community.	facilities; streets			grocery store: N=142, 97.3%, restaurant or fast-food outlet: N=67, 45.9%, produce stands: N=51, 34.9%, convenience store: N=40, 27.8%. Barriers to PA: recreational areas and exercise facilities were difficult to reach without adequate/ reliable transportation, expensive entry/membership fees. Walking, biking, or running outside is not easy due to lack of sidewalks and busy roads, lack of safety.
Atkinson et al., 2010	Atkinson NL, Desmond SM, Saperstein SL, Billing AS, Gold RS, Tournas-Hardt A. Assets, challenges, and the potential of technology for nutrition education in rural communities. *J Nutr Educ Behav.* 2010;42(6):410-416.	58 communities were assessed from 5 counties in Maryland.	Stakeholder interviews that included questions on community overview, nutrition, PA, and technology as well as introducing the intervention "Eat Smart, Be Fit, Maryland!". Environmental Scan and a Windshield Tour included a semi structured questionnaire on county reputation, types of community centers or gathering places for community events, accessibility of sites to residential housing areas, historic sites in the community, adequacy of public transportation, & adequacy of food and other shopping options. Checklist Inventory asked about the presence of major man-made or natural barriers dividing the community, location and proximity of low-income and affluent areas, presence of social service agencies (churches, libraries, etc.), location and concentration of fast-food restaurants, presence	Recreation facilities; parks; local food producers	**X**	**X**	Stakeholders identified natural beauty (27-92% of stakeholders), access to outdoor recreational opportunities (18-45%), slow-paced lifestyle (18-46%), family-oriented culture (36-91%), and community collaboration/volunteerism (18-45%) as community assets towards HE and PA in Eastern Shore, Southern, Near Southern, Western, and Far Western Maryland. In the same locations, stakeholders identified lack of jobs with living wages/benefits (36-91%), limited public transport (27-67%), lack of health insurance/ services (27-45%), limited affordable housing (8-91%), lack of programs/ activities for youth (15-45%), and insularity within communities (17-36%) as community challenges to HE and PA. Participants noted that farming and the agricultural industry

			and location of public parks and recreation facilities.				provided residents access to fresh produce.
Babey et al., 2008	Babey SH, Hastert TA, Yu H, Brown ER. Physical activity among adolescents. When do parks matter? *Am J Prev Med.* 2008;34(4):345-348.	4010 total adolescents. 3269 adolescents from urban areas; 731 from rural areas; 1973 adolescents were from families below 300% of Federal Poverty Level; 2037 were from families with income of 300% Federal Poverty Level and above. 1125 Latino, 313 Asian, 263 African American, 2071 White.	2003 California Health Interview Survey, a telephone survey to examine the relationship between PA and access to a safe park among adolescents. Adolescents who reported a park or open space within walking distance of home that was safe during the day were considered to have access to a safe park.	Parks		**X**	Stratified analyses revealed that access to a safe park was positively associated with regular activity and negatively associated with inactivity for adolescents in urban areas, but not rural areas. Association of access to safe parks with PA for adolescents in rural areas: Regular PA: RR (95% CI): 0.95 (0.8-1.06); physical inactivity: RR (95% CI) 1.79 (0.59-5.05).
Baker, 2017	Baker EA, Elliott M, Barnidge E, et al. Implementing and evaluating environmental and policy interventions for promoting physical activity in rural schools. *J Sch Health.* 2017;87(7):538-545.	4 elementary schools included 5 administrators and 4 teachers. Total students observed: 8870, 4393 girls and 4477 boys	Qualitative interviews on factors facilitating and hindering environmental and policy changes. System for Observing Play and Leisure Activity in Youth (SOPLAY) observations to assess facilitators, barriers and the effect of the dissemination of environmental and policy changes on students' behaviors.	Schools		**X**	Teachers stated that it was possible to implement intervention activities (e.g., brain breaks) because they could modify them according to student needs and they did not take away from instruction. Participants noted the importance of providing training, assistance with implementation planning, and funding, as opposed to simply providing information about effective practices. Environmental (e.g., creation of tracks) and policy (e.g., brain breaks) interventions increased PA among rural youth.
Bardenhagen et al., 2017	Bardenhagen CJ, Pinard CA, Pirog R, Yaroch AL. Characterizing rural food access in	20 stores; 10 telephone interviews with stakeholders	Telephone interviews on challenges in accessing healthy foods in rural areas, community and store descriptions. Also conducted food environment	Food retail	**X**		Diversion of revenue to larger supercenters, aging and dwindling population, cost of fruits and vegetables, need for further nutrition education and

	remote areas. *J Community Health.* 2017;42(5):1008-1019.		scans using Food Store Observation Form and the Food Retail Outlet Survey Tool (FROST), and categorized food retail outlets using North American Industry Classification System (NAICS) codes.			increasing demand for convenience items were highlighted as challenges facing healthy food access.
Barnes et al., 2016	Barnes TL, Freedman DA, Bell BA, Colabianchi N, Liese AD. Geographic measures of retail food outlets and perceived availability of healthy foods in neighbourhoods. *Public Health Nutr.* 2016;19(8):1368-1374.	23.3% were male, 77.7% were female; 11.4% Not a high-school graduate, 35.6% High-school graduate, 53% Some college or higher; 34.5% Minority (non-Hispanic black, Hispanic or other), 65.5% Non-Hispanic white,	The Behavioral Risk Factor Surveillance Survey (BRFSS) to measure demographics and socioeconomic characteristics. Survey to measure perceived availability of healthy foods. Geographic measures of the food environment (ArcGIS) to assess the distance to food outlet.	Food retail	**X**	Presence of a supermarket within a 5-mile buffer area was significantly associated with perceived availability of healthy foods when controlling for all other food outlet types. No other geographic presence measures were significant predictors of perceived availability of healthy foods. Distances to the nearest supermarket, dollar and variety store and fast-food restaurant were all significantly associated with perceptions of healthy food availability.
Barnidge et al., 2013	Barnidge EK, Hipp PR, Estlund A, Duggan K, Barnhart KJ, Brownson RC. Association between community garden participation and fruit and vegetable consumption in rural Missouri. Int J Behav Nutr Phys Act. 2013;10:128. Published 2013 Nov 19. doi:10.1186/1479-5868-10-128	141 key respondents to the intercept survey; 75 (53.2%) More than high school equivalency, 56 (39.7%) High school equivalency or less, 10 (7.1%) missing, 77 (54.6%) Caucasian, 49 (34.8%) Non-Hispanic African American. 1000 respondents to the population based survey; 26.6% male, 73.4% female; 88% Non-Hispanic White, 11.2% all other	Community garden intercept survey and a population-based telephone survey to identify the relationship between working in a community garden and consuming fruits and vegetables.	Community gardens	**X**	There was an association between community gardening prevalence and fruit and vegetable consumption. With increased visits to the community garden, participants showed a higher likelihood of participating in HE behaviors like eating fresher food, spending less money on food, and eating less fast food. Those who reported community garden participation were more likely to report eating fruits 2 or more times per day and vegetables 3 or more times per day than those who did not report community garden participation.

		categories, 0.8% missing; 55.4% High school equivalency or less, 43.9% More than high school equivalency, 0.7% missing.					
Barnidge et al., 2013	Barnidge EK, Radvanyi C, Duggan K, et al. Understanding and addressing barriers to implementation of environmental and policy interventions to support physical activity and healthy eating in rural communities. J Rural Health. 2013;29(1):97-105. doi:10.1111/j.1748-0361.2012.00431.x	13 key informant interviews; (Charleston, Ellington, West Plains, Mountain View, and Doniphan)	Telephone interviews that asked demographic, participants' perceptions about the physical and social environment related to 3 domains "sense of belonging, social cohesion, and food environment." Questions included likert scale ranking the food and physical environments; sense of belonging scale included *"my community is a good place for kids to grow up" and "I expect to live in this community for along time."* Social cohesion scale included items *" people around here are willing to help their neighbors," and "this is a close knit community."*	Trails, streets, schools, community garden; local food producers	**X**	**X**	Interviews identified barriers to implementation of environmental and policy interventions to support PA and HE in rural communities: cultural differences, population size, limited human capital, and difficulty demonstrating the connection between social and economic policy and health outcomes. Strategies to overcome these barriers were also identified: developing broad-based partnerships and building on the existing infrastructure. Environmental and policy interventions to promote healthy eating primarily took place in school and community settings.
Bauer et al., 2012	Bauer KW, Widome R, Himes JH, et al. High food insecurity and its correlates among families living on a rural American Indian Reservation. *Am J Public Health.* 2012;102(7):1346-1352.	124 total of families; 23.3% or 98 < high school, 22.6% or 95 completed high school, 30% or 147 had some college or technical school, 19.1% or 180 completed college or graduate school	Dataset from the baseline survey of Bright Start randomized control trial (included Household Food Security Scale) that included 6 items to assess families' ability to obtain food and the behaviors they engaged in to conserve food over the previous 12 months. Children's dietary intake was assessed by parents who reported the frequencies of their child consumption of food and beverages. Home food availability was assessed by asking about types	Home environment; food retail	**X**		Almost 40% of parents reported food insecurity in the last 12 months, and children from food insecure families consumed hot food or ready-made food from convenience stores or gas stations twice as often as other children. In general, barriers in rural communities include cultural differences, population size, limited human capital, and difficulty demonstrating the connection between social and economic policy and health outcomes. Key informants

			of fruits, vegetables, beverages, snacks, and energy-dense foods in the home during the past week. Family food practices was assessed by asking about frequency of food shopping trips and barriers to keeping healthy food in the home.				identified a number of strategies to overcome these barriers such as developing broad-based partnerships and building on the existing infrastructure.
Belansky et al., 2010	Belansky ES, Cutforth N, Delong E, et al. Early effects of the federally mandated Local Wellness Policy on school nutrition environments appear modest in Colorado's rural, low-income elementary schools. *J Am Diet Assoc.* 2010;110(11):1712-1717.	Of the 45 rural schools in the random sample, student enrollment ranged from 28 to 546 (mean 204), students receiving free or reduced lunch rates ranged from 40% to 82% (mean 54.4%); and student body ethnicity ranged from 0% to 72% Hispanic (mean 27%).	School Environment and Policy Survey (SEPS) to assess HE related to environment and policy features.	Local food producers; schools		**X**		Three improvements were observed from 2005 to 2007: increases in the percent of schools with policies stipulating predominantly healthy items be offered in classroom parties (21.4% vs. 48.7%), daily fresh fruit offerings in the lunchroom (0.80 choices vs. 1.15 choices), and the percent of schools using skinless poultry (27% vs 59%).
Belansky et al., 2013*	Belansky ES, Cutforth N, Gilbert L, et al. Local Wellness Policy 5 years later: Is it making a difference for students in low-income, rural Colorado elementary schools? *Prev Chronic Dis.* 2013;10:E184.	For 45 schools in the random sample, student enrollment ranged from 28 to 546 (mean, 204); students receiving free or reduced-price lunch rates ranged from 40% to 82% (mean 55%); and student body Hispanic ethnicity ranged from 0% to 72% (mean 27%). Survey response rates ranged from 71% to 91%.	School Environment and Policy Survey, which is a 3-module questionnaire that assesses PA and nutrition; module one elementary school policies and factors related to PA and nutrition (completed by principals). Module 2 on Nutrition Services (completed by food service managers). Module 3 on Physical Education and Other PA Programs (completed by physical education teachers). School informant interviews, debriefing forms, and logbooks also used. Items include *"number of minutes of recess*	Schools		**X**	**X**	Schools using the Adapted Intervention Mapping (AIM) program had 22 total Policy System Environmental changes (compared to 3 totals from the other program). Most common change was reversing lunch and recess so that recess came first, making healthy food more available outside of the classroom, and making unhealthy foods less available. Each school made an average of 4.4 effective Policy System Environmental changes and 90% were maintained one year later. More schools reported using skinless poultry (26.67%

		Demographics of the universe of 72 eligible schools are similar to the 45 randomly selected schools: 215 students on average per school, 55% of students qualifying for free or reduced-price lunch, and 28% of students Hispanic.	*per week, minutes of PE, playground features, total number of fruit and vegetable offerings at breakfast and lunch, presence of a school health team, and familiarity with their district's LWP and related state or federal mandates"*			in 2005 vs 58.82% in 2007). Teachers were adding more recess time and activities compared to 5 years ago.
Bevans et al., 2010	Bevans KB, Fitzpatrick LA, Sanchez BM, Riley AW, Forrest C. Physical education resources, class management, and student physical activity levels: A structure-process-outcome approach to evaluating physical education effectiveness. *J Sch Health.* 2010;80(12):573-580.	46 physical educators; 184 Physical Education sessions in 34 schools, including 26 elementary schools and 8 middle schools	Survey questions adapted from the Center of Disease Control and Prevention School Health Policies and Programs Survey (SHPPS) included 3 questions on the presence of a written physical education curriculum, use of curriculum among physical education teachers, and use of the National Standards for Physical Education from the National Association for Sport and Physical Education. Teachers responded to 6 questions pertaining to their satisfaction with the sport and exercise equipment available at their school (eg, "How much of your school's exercise equipment is in adequate condition?"). System for Observing Fitness Instruction Time	Schools	**X**	Physical educators rated their sport and exercise equipment positively, rating equipment resources an average of 3.96 (SD = 0.73) on the 5-point scale. Although the vast majority of schools (93.1%) had access to a gymnasium for use during physical education, fewer schools had access to a playing field (66%), an outdoor basketball court (44%), a baseball or softball diamond (38%), or an outdoor track (29%). Among elementary schools, 56% had a playground and 47% had a hard surface area, which were used during PE instruction. The average rating of facility resources was 0.58 (SD = 0.35) on the 0 to 2 scale.

			(SOFIT) assessed lesson, students' activity and class management time.				
Blumenschine et al., 2018	Blumenschine M, Adams M, Bruening M. Prevalence of and differences in salad bar implementation in rural versus urban Arizona schools. *J Acad Nutr Diet.* 2018;118(3):448-454.	596 school nutrition managers; 134 (22.5%) rural and 462 (77.5%) urban; 73 (54.8%) elementary schools in rural areas and 311 (67.3%) in urban areas, 8 (60.8%) middle schools in rural areas and 46 (10.0%) in urban areas, 53 (39.5%) high schools in rural areas and 105 (22.7%) in urban areas The mean free/reduced lunch rate in rural schools is 67.2 (SD 20.0) and in urban schools is 63.1 (SD 26.0).	Secondary analysis using a web administered survey (68 items) assessing the presence of cafeteria self-service salad bars, produce bars, fresh fruit and vegetable bars, fruit and vegetable bars, condiment bars, etc. In addition to questions about salad bar promotions for schools that had salad bars and barriers to having a salad bar for schools that did not have salad bars.	Schools		**X**	Rural schools without salad bars more often reported perceived food waste and cost of produce as barriers to implementing salad bars, and funding was a necessary resource for offering a salad bar in the future. After adjustment, the prevalence of salad bars did not differ between urban and rural schools (46.9%4.3% vs 46.8%8.5%, respectively). No other geographic differences were observed in reported salad bar promotion, challenges, or resources among schools that currently have or once had a salad bar.
Bopp et al., 2012	Bopp M, Fallon EA, Bolton DJ, Kaczynski AT, Lukwago S, Brooks A. Conducting a Hispanic health needs assessment in rural Kansas: Building the foundation for community action. *Eval Program Plann.* 2012;35(4):453-460.	Garden City (Finney Co.) (n=68), 70.3% female; 50% Less than high school education; Dodge City (Ford Co.) (n=70), 60% female; 63.5% Less than high school education; Liberal (Seward Co.) (n=51), 88.9% female; 60.9% Less than high school education	Hispanic Health Needs Assessment (HHNA) to identify health issues within the Hispanic population, including heart disease and stroke, diabetes, nutrition and overweight and PA/fitness and access to quality health services. Perceptions of the neighborhood environment were measured with the International PA Questionnaire Environmental Module. The 17 items in the IPAQ-E cover elements such as residential density, land use mix,	Parks; recreation facilities; Streets		**X**	Sample reported walking or biking to work 1.9 (2.2) times per week, with 9.4% meeting fruit and vegetable recommendations. 37% reported no sidewalks in their neighborhood, 34.9% reported feeling unsafe walking at night, 31.7% reported having no safe park in their neighborhood, 34.4% reported having no free or low-cost opportunities for recreation. Sample also identified nutrition, obesity, diabetes, alcohol/drug addiction as

			transportation, aesthetics, and safety from traffic and crime, and are taken or adapted from previously evaluated surveys of neighborhood environments.				perceived health concerns in the community.
Bove & Olson, 2006	Bove CF, Olson CM. Obesity in low-income rural women: Qualitative insights about physical activity and eating patterns. *Women Health.* 2006;44(1):57-78.	28 informants participated; 5 or 18% have less than high school,	Open and closed ended questions interviews focusing in particular on challenges to maintaining a healthy weight that may be unique to rural poverty. Food security was assessed by an 18-item scale of the U.S. Household Food Security Survey Module	Streets; home environment	**X**	**X**	Homes outside of population centers were located along highways with no sidewalks and few streetlights and along rural roads that were muddy in spring and snow/ice covered in winter. Walking was difficult in these settings, especially for informants with young children and strollers or for those with health problems inhibiting mobility. Informants with transportation problems who resided in remote countryside areas were less active in their daily lives than were those who lived in (n=7) or moved to (n=5) the village centers. Food insecurity and associated fluctuating household food supplies contributed to disordered eating patterns and to perceptions of dietary deprivation that affected food intake. Rural isolation contributed to negative emotional states that some women alleviated by eating.
Brownson et al., 2000	Brownson RC, Housemann RA, Brown DR, et al. Promoting physical activity in rural communities: walking trail access, use, and effects. *Am J Prev Med.* 2000;18(3):235-241.	1269 participants; 438 (34.5%) men, 829 (65.3%) women, 2 (0.2%) unknown, 887 (70.0%) received high school or less, 381 (30.0%) had some college or college graduate and 1 (0.1%)	Questionnaire that used the Missouri Behavioral Risk Factor Surveillance System (BRFSS) on walking behavior in past week, regular walking, access to walking trails, access to indoor exercise facilities, use of walking trails; exercise behavior changes due to walking trail use, perceptions of trail safety, how respondents	Trails; recreational facilities		**X**	Only 19.5% of respondents were classified as regular walkers. About one third of respondents (36.5%) reported having access to walking trails in their area, and 50.3% reported having access to indoor facilities for exercise. 38.8% of respondents who had access to walking trails had used it. 55.2% of respondents

		unknown; 1152 (90.8%) Caucasian, 99 (7.8%) African American, 18 (1.4%) other	found out about the trails; and aspects of the trails most liked.				who used the trails reported they had increased their amount of walking since they began using the trail. Respondents who were more likely to have used the walking trails included women, higher education, had income $35,000 or more/ year, and who were regular walkers. 86.9% of trail users indicated that using the trail was safe; only 1.1% were unsafe of exercising in the trails.
Brownson et al., 2005	Brownson RC, Hagood L, Lovegreen SL, et al. A multilevel ecological approach to promoting walking in rural communities. *Prev Med.* 2005;41(5-6):837-842.	599 (79.7%) female in intervention and 572 (73.4%) in control, 153 (20.3%) Male in intervention, 207 (26.6%) in control; 120 (15.9%) <High school graduate in intervention, 75 (9.7%) in control, 292 (38.8%) High school graduate in intervention and 182 (23.4%) in control; 187 (24.8%) had Some college in intervention and 186 (23.9%) in control; 153 (20.3%) College graduate in intervention and 336 (43.0%) in control; 714 (94.9%) White in intervention and 734 (94.2%) in control, 12 (1.6%)	Two special risk factor surveys based on the Behavioral Risk Factor Surveillance System (BRFSS) Methodology and environmental questions	Trails		X	Interventions were developed with community input and included individually tailored newsletters; interpersonal activities that stressed social support and health provider counseling; and community-wide events such as fun walks. At follow-up (n = 1531), the percentage of respondents who met the recommendation for walking was the same across the intervention and comparison areas. After adjusting for covariates and baseline rates, intervention participants in the moderate and high dose categories were about three times more likely to meet recommended guidelines for walking. When data were stratified according to low vs. high access to the physical environment, there was evidence for a linear trend in walking for high access environments.

		Black in intervention and 15 (1.9%) in control.					
Buro et al., 2015	Buro B, Gold A, Contreras D, et al. An Ecological Approach to exploring rural food access and active living for families with preschoolers. *J Nutr Educ Behav.* 2015;47(6):548-554 e541.	377 survey and 15 interview participants. For survey participants: 28 or 7.4% received less than high school, 116 or 30.8% high school/general equivalency diploma, 111 or 29.4% some college, 48 or 12.7% associate degree, 74 or 19.6% bachelor's degree or more; For interview participants: 2 or 13.3% high school/general equivalency diploma, 1 or 6.7% some college, 6 or 40% associate degree, 5 or 33.3% Bachelor's degree or more	The Active Where? Parent Survey, which was a sub-study of the Communities Preventing Childhood Obesity (CPCO) study to measure parents' perceptions about the physical/ built environment and their effects on children's PA and eating behaviors. Semi structured conversational interview questions on beliefs about child healthy lifestyle, location of food shopping, reasons for choice of food shopping location, quality and variety of food available in stores, decision making for food choices, kinds of family activities, activities child engages in on their own, access to PA equipment, locations they purchase PA equipment, ideas to improve the family health, ways community can provide more opportunities for recreational activities or PA for family.	Recreation facilities; parks; playgrounds; streets; trails, food retail	**X**	**X**	The theme of accessibility and use of resource categorized barriers to accessing food and PA opportunities. Convenience of accessing resources, knowledge of resources, and perceived value all influenced how parents used available resources. For food, parents had access to a local grocery store, but not everyone chose to shop there. Participants preferred shopping in urban communities to receive the best value, often coordinating trips with another errand to justify the time and costs of travel and buying in bulk to last until the next trip. For accessing PA opportunities, seasonality influenced patterns and use of indoor and outdoor recreational spaces. Recreational programs available for preschoolers were offered in the summer. Outdoor recreational facilities (parks and swimming pools) were also used more often in the summer. Children engaged in indoor activities during the winter because it could be too cold to play outside regularly or for extended periods of time. Indoor activities were typically sedentary, such as crafts and gaming. Limited indoor space restricted children's ability to stay active in the winter months.
Buro et al., 2015	Byker Shanks C, Haack S,	19 (57.6%) high school, 14 (42.4%)	Focus groups covered several aspects of food choices,	Food retail	**X**		Four major themes related to factors influencing food

	Tarabochia D, Bates K, Christenson L. Factors influencing food choices among older adults in the rural Western USA. *J Community Health.* 2017;42(3):511-521.	college; 33 (100%) White	including community, food preferences, budgeting, food availability, and food community public programs.				choices among rural older adults emerged from this study: perception of the rural community environment, support as a means of increasing food access, personal access to food sources, and dietary factors
Caspi et al., 2017	Caspi CE, Wang Q, Shanafelt A, et al. School Breakfast Program participation and rural adolescents' purchasing behaviors in food stores and restaurants. *J Sch Health.* 2017;87(10):723-731.	732 9th and 10h grade students; 54% of students were female, 46% were male; 67% were White, 33% non-White; 35% were eligible for free or reduced lunch program and 65% received for full priced lunches.	BreakFAST study surveys included questions addressed factors related to student breakfast patterns, social norms about school breakfast, use of the food environment during the school day, transportation to and from the school, other self-reported health behaviors, and student demographics	Schools; food retail	**X**		Students with increased School Breakfast participation were more likely to decrease fast-food restaurant purchases on the way home from school (OR 1.017, 95% CI 1.005, 1.029), but were less likely to decrease purchases at food stores for breakfast (OR 0.979, 95% CI 0.959, 0.999). Food establishment use was associated with lower HE Index-2010 dairy component scores (p=.017).
Chadwick et al., 2019	Chadwick JQ, Tullier MA, Wolbert L, et al. Collaborative implementation of a community-based exercise intervention with a partnering rural American Indian community. *Clin Trials.* 2019;16(4):391-398.	77 adolescents (male and female); age 11-20; Indian American. Tribal leaders participated in discussions, although the number and characteristics were not disclosed.	Discussions regarding facilitation and concerns to implementing the exercise intervention.	Recreational facilities		**X**	Study was conducted through 7 wellness centers across the Nation, but distance prevented implementation at all 7 at the beginning. Lack of youth orientated wellness program was preventing youth PA along with hours the wellness centers were open. Transportation to wellness centers were a barrier. Extended hours in wellness centers, after school programs designed specifically for youth, provision of exercise clothing and gear, and $250 in credit for purchasing exercise clothes after completion of the fourth session. Extended hours for the wellness center did not fully address the transportation barrier.

Chapman et al., 2019	Chapman LE, Sadeghzadeh C, Koutlas M, Zimmer C, De Marco M. Evaluation of three behavioural economics 'nudges' on grocery and convenience store sales of promoted nutritious foods. *Public Health Nutr.* 2019;22(17):3250-3260.	For convenience stores: 14, 4946 in intervention and 97264 in control stores; In intervention: 92.4% received high school; 57.7% college graduate; 76.5% White, 12.2% African American, 8.4% Hispanic, 0.6% Native American, 8.1% Asian; in control: 89.6% received high school and 34.2% college graduate; 82.9% White, 12.5% African American, 6.4% Hispanic, 1.2% Native American, 1.5% Asian. For grocery stores: 19883 in intervention and 51310 in control stores; In intervention: 72.2% received high school, 14.6% college graduate; 40.6% White, 51.5% African American, 3.9% Hispanic, 5.6% Native American, 0.4% Asian. In control, 76.8% received high school, 13.4 college graduate; 40.2% White,	Information provided by the store managers on store traffic patterns, fidelity checks, and customer intercept surveys that asked customers whether they recognized images of the intervention materials, and to select which photo(s) they remembered seeing over the past 4 weeks	Food retail		**X**	In convenience stores, there were no significant differences between sales of the promoted items during the intervention period for any of the nudges when implemented individually. However, compared with baseline sales, implementation of all three nudges simultaneously was associated with an increase in sales during the intervention period based on proportional computations (P = 0·001), whereas no significant changes in sales were observed in the control convenience store. Among the grocery stores, there were no significant differences in sales during the intervention period for any of the nudges or the combined intervention compared with baseline sales.

		53.5% African American, 2.7% Hispanic, 4.1% Native American, 0.8% Asian				
Chrisman et al., 2014	Chrisman M, Nothwehr F, Yang J, Oleson J. Perceived correlates of domain-specific physical activity in rural adults in the Midwest. *J Rural Health.* 2014;30(4):352-358.	407 participants; 57% were female, 43% were men; education: less than high school 6.1%, high school 35.1%, some college 32.7%, bachelor's or higher 26.0% All were non-Hispanic whites,	Questionnaire combining questions from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Survey on neighborhood characteristics and barriers to being active. The Kaiser PA Survey asked about domain specific activity levels.	Streets; schools	**X**	PA examined in the active living domain was positively associated with having a positive attitude toward using government funds for biking trails (F = 10.25; P < .001) and a summary score of neighborhood characteristics (F = 7.12; P = .015), and it was negatively associated with barriers to exercise (F = 17.49; P < .001). Factors that were associated with the PA summary score across all domains included workplace incentives for exercise (F = 19.33; P < .001) and supporting physical education in the schools (F = 3.57; P = .047). The sum total of PA was negatively associated with barriers (F = 8.33; P = .004), and there was an interaction effect of age and supporting government funds being used to build bike trails (F = 6.85; P = .023), with younger adults supporting the use of government funds to build biking trails.
Chrisman et al., 2015	Chrisman M, Nothwehr F, Yang G, Oleson J. Environmental influences on physical activity in rural Midwestern adults: a qualitative approach. *Health Promot Pract.*	19 participants, 11 female and 8 males. All were Caucasian.	Focus groups interviews to define PA and exercise; neighborhood and community to measure environmental proportions and questions to identify barriers and facilitators of PA in communities.	Natural environments ; recreation facilities streets; trails; home environment	**X**	Having a higher number of items in one's community that might be associated with PA was associated with more active transportation (P = .0066); this included shopping malls (P = .0032), sidewalks (P = .0048) and hunting/conservation areas (P = .0213). PA in house or yard

	2015;16(1):142-148.						work was associated with the policy attitude of agreeing that local government funds should be used to build swimming pools (P = .0018) and greater use of PA resources and facilities (P = .0005). Total PA was positively associated with a greater number of positive community aspects (P = 0.0156), especially having street lights (P = .0044). The total moderate activity, as measured by summing moderate PA across all domains, was positively associated with greater use of PA resources (P = .0147), and hills (P = .0371).
Chrisman et al., 2015	Chrisman M, Nothwehr F, Janz K, Yang J, Oleson J. Perceived resources and environmental correlates of domain-specific physical activity in rural Midwestern adults. *J Phys Act Health.* 2015;12(7):962-967.	143 individuals; 88 (63%) women 51 (37%) men; 39 (27%) high school diploma or less, 29 (21%) some college, 50 (36%) Associate's or Bachelor's degree, 22 (16%) post-graduate degree; 97% white	Modified version of a questionnaire developed by Brownson and colleagues to measure perceived social, environmental, and policy correlates of PA. A self-administered survey included the International PA Questionnaire Long Form (PA-IPAQ) that measures PA behavior over the past seven days across the domains of occupation, transportation, house and yard work, and recreation and leisure.	Streets; workplace; natural environment; recreational facilities		**X**	Predictors of PA included: employers providing time for exercise (P = .0003); available shopping malls (P = .0032); activity-friendly community aspects (P = .0048); favorable policy attitudes (P = .0018): participation in sports (P < .0001); encouragement from friends (P = .0136); awareness (P = .0015) and use (P = .0113) of community resources; and having hills (P = .0371). The most common environmental barriers reported were gravel/unpaved/muddy/dusty roads (35%).
Comstock et al., 2016	Comstock C, Kattelmann K, Zastrow M, et al. Assessing the environment for support of youth physical activity in rural communities. *J Nutr Educ Behav.*	837 participants; 45% of respondents' male and 55% female; 51% Hispanic, Latino, or Spanish, 7% Caucasian, 10% American	Active Neighborhood Checklist (ANC) that assesses 5 areas within the community land use, public transportation, local street characteristics, the quality of the environment for a pedestrian, and places to walk and bicycle. Perceptions of the Environmental Support for PA	Streets; recreational facilities		**X**	Students perceived the environment as supporting PA, with the majority responding agree and strongly agree when asked about opportunities for PA in the community. Not enough space to be active, no choices for activities, no equipment or facility, and

	2016;48(4):234-241.e231.	Indian or Alaskan Native.	include *"I think there are plenty of opportunities to be physically active in my community; It is difficult to be physically active in the local park/street near my home because there is not enough space to be active in; It is difficult to be physically active in the local park/street near my home because there are no choices for activities; It is difficult to be physically active in the local park/street near my home because there is no equipment/facility; It is difficult to be physically active in the local park/street near my home because it is not safe (owing to crime or traffic)*".			safety were identified as things that made it difficult to engage in PA. No difference in ANC scores for rural communities that were assessed. There was a difference for street characteristics, with one community having a higher ANC score indicating that this community may be better equipped for biking and walking. However, there were no significant differences among communities in reported participant PA levels.
Cornish et al., 2016*	Cornish D, Askelson N, Golembiewski E. "Reforms looked really good on paper": Rural food service responses to the Healthy, Hunger-Free Kids Act of 2010. *J Sch Health.* 2016;86(2):113-120.	The telephone survey completed by 67 food service directors and the online survey by 57; 63% of the food service directors received some training or education after high school.	Semi-structured telephone interviews and online surveys with closed and open-ended questions regarding respondents' daily responsibilities, perceptions of the new requirements, and support/challenges while implementing the requirements.	Schools; local food producers	**X**	Of the 57 online survey participants, 49 (92%) worked with vendors and food distributors. Most (94%) planned menus themselves and 98% supervised staff. Most food service directors reported negative perceptions of the act's implementation such as challenges actually implementing the requirements, concerns about portion sizes and calorie allotments being too small, increased waste in the cafeteria, concerns about the speed with which the changes were required to be implemented, financial concerns with more expensive foods required, and decreased school lunch participation. Positive comments focused on students enjoying the fruits offered with lunch and that

							students were slowly adjusting positively to the changes.
Crooks, 2003	Crooks DL. Trading nutrition for education: Nutritional status and the sale of snack foods in an eastern Kentucky school. *Med Anthropol Q.* 2003;17(2):182-199.	54 students; 25 boys and 29 girls; 3-5 grades	Participant observation and semi structured/unstructured interviews with students and staff to assess the relationship between food, nutrition and health; food consumption by using 4- 24-hour dietary recalls	Schools		**X**		Parents were concerned that the sale of snacks were prohibitive for students who could not afford snacks, and that the snacks themselves were unhealthy. The principal defended selling snacks because it provides funds for other school related activities, and that unhealthy snacks generated better income.
Daly et al., 2017	Daly CM, Foote SJ, Wadsworth DD. Physical activity, sedentary behavior, fruit and vegetable consumption and access: What influences obesity in rural children? *J Community Health.* 2017;42(5):968-973.	153 students; 46.7% male, 53.3% female, 83.6% Black, 12.5% Hispanic, 3.9% White. Median household income was $30,000 USD income for families with children attending this school	Child Nutrition Questionnaire, which measures fruit and vegetables consumption and access outside school; questions include "*Have you ate this food in the past 2 days?*" Questions on fruits and vegetables' accessibility include whether fruits and vegetable were available at home (2 questions), if they were served with meals (1 question) and if they were encouraged to eat them at home (1 question). Likert type questions on PA performed outside school, modified from the National Children and Youth Fitness Study and the 1990 Youth Risk Behavior Survey: questions on access to sporting and/or fitness equipment at home (1 question), access to play areas (2 questions), safety (1 question), and involvement in community PA organizations (one question on a dichotomous scale and two questions on a choice of frequencies).	Schools		**X**	**X**	Survey suggested below average access to fruits and vegetables, and the only fresh vegetable option at school was a salad provided approximately once a week. Students' grade level was significantly associated with moderate to vigorous PA ($p = .023$), sedentary activity ($p= .001$), and light PA ($p = .030$). There was also a significant difference between 6th grade's sedentary behaviors and other grade levels with a greater time in sedentary behaviors than 3rd ($p = .002$), 4th ($p = .008$) and 5th ($p= .001$) grade. In assessing children's access to physical activity opportunities, results suggested that children had adequate access ($M = 14.41 \pm 3.68$).

D'Angelo et al., 2017	D'Angelo H, Ammerman A, Gordon-Larsen P, Linnan L, Lytle L, Ribisl KM. Small food store retailers' willingness to implement Healthy Store Strategies in rural North Carolina. *J Community Health.* 2017;42(1):109-115.	55 retailers in 54 stores n=40 (72.7%) male; 25 (46.3%) received high school or less, 10 (18.5%) had some college, 19 (35.2%) college graduate.	Interviews and willingness to implement each strategy was measured on a 5-point scale, strategies include: stock at least 3 choices of fresh fruits and 3 choices of fresh vegetables, stock prepared fresh fruits or vegetables (like pre-cut apple slices or carrot sticks), stock any frozen fruits or vegetables, stock skim, 1 or 2 % milk, stock whole wheat bread (like Nature's Promise 100 % Wheat Bread), display healthy snacks such as fruit at or next to the checkout counter, move soda, chips or candy displays away from the register.	Food retail		**X**	Among the healthy food strategies assessed, retailers were most willing to stock skim/low-fat milk, display healthy snacks near the register, and stock whole wheat bread. Current practice showed that only 27.8 % stocked whole wheat bread, 35.2 % had healthy snacks near register and 42.6 % stocked low fat milk. About half of retailers were willing to stock at least three fresh fruits and three fresh vegetables, however only 2 % of stores currently stocked this amount of produce. Stock skim, 1 or 2 % milk n=53, Willing to Implement (WtI): 73.6% Current Practice (CP): 42.6% Display healthy snacks such as fruit at or next to the checkout counter n=53, WtI: 69.8% CP:35.2% Stock whole wheat bread, like Nature's Promise 100 % Wheat Bread n=53, WtI: 66.0% CP:27.8% Stock at least 3 choices of fresh fruits and 3 choices of fresh vegetables n=53, WtI:50.9% CP:2.0% Stock prepared fresh fruits or vegetables, like pre-cut apple slices or carrot sticks n=53, WtI:39.6% CP:8.2% Stock any frozen fruits or vegetables n=53, WtI:35.9% CP:8.2% Move soda, chips or candy displays away from the register n=53, WtI: 34.0% CP:11.1% Remove ads/signs for tobacco products outside the store n=51 WtI:15.7% CP:14.8% Remove ads/signs for tobacco products inside the

							store n=52 WtI:15.4% CP:0.0% Move tobacco product displays away from the register n=52 WtI: 5.8% CP:7.4% Not sell any type of tobacco product n=52 WtI:1.9% CP:0.0%
Davis et al., 2014	Davis SM, Cruz TH, Kozoll RL. Health impact assessment, physical activity and federal lands trail policy. *Health Behav Policy Rev.* 2014;1(1):82-95.	Cuba, New Mexico; American Indian, Hispanic and Anglo community	Health Impact Assessment screening and scoping processes that aims at increasing PA, preventing long term chronic diseases, mental health, improving physical health and quality of life. The assessment step involves identifying the potential health impacts, both positive and negative, of a policy, program or plan.	Natural environments ; Trails		**X**	Among the 75 adults that completed the VIVA General Survey, nearly half (45.3%) reported that they hike in and around Cuba, NM. The most common reason for not hiking was poor health. The vast majority of respondents (88.0%) felt that having the Continental Divide National Scenic Trail (CDNST) and access trails closer to Cuba would benefit the community, most commonly by attracting people to Cuba (30.3%), connecting residents to nature (22.7%), and providing health benefits to residents (20.0%). Of the 30 respondents to the Sandoval County Fairgrounds Survey, half lived more than 50 miles from Cuba. Most (86.7%) reported liking to hike or walk, and 70% reported that they were very likely or somewhat likely to use the new section of the CDNST after it is completed. Barriers to STEP-HIA (Studying Trail Enhancement Plans-Health Impact Assessment) included time, competing priorities, staff turnover, historical use of land, opposition. Facilitators to STEP-HIA included relationship building, local champion, community

						involvement, mapping, and leveraging resources. 76% of sample identified that information about level of difficulty of the trails was important when choosing where to hike. 72% of sample reported scenic beauty of the trail, 68% reported trail safety, 64% reported convenient location, 64% reported signage, 60% reported good parking available; 56% reported access to amenities; 48% reported recommendations from friends or family, 44% reported familiarity with the area, and 36% reported degree of difficulty of the trails as an important characteristic when choosing where to hike. Well-spaced trailheads, safe and convenient access to trails support trail use. Trail Characteristics when choosing where to hike: 68% trail safety, 64% convenient trail location, 56% access to amenities, 36% degree of difficulty of the trails.
Davis et al., 2017	Davis MM, Spurlock MM, Ramsey K, Smith J, Beamer BA, Aromaa S, McGinnis PB. Milk Options Observation (MOO): A mixed-methods study of chocolate milk removal on beverage consumption and	315 unique students: 49.5% female, 50.5% male; 34.6% Non-Hispanic White; 52.7% Hispanic, 12.7% Non-Hispanic other; 35.6% grade K, 33.0% grade 1, 31.4% grade 2.	Data collection occurred included beverage waste measurements and participant observation. Team members took brief jottings during observations and turned them into rich, detailed field notes within 24 hours.	Schools	**X**	Five emergent themes and illustrative quotes were compiled from field notes. First, school staff viewed chocolate milk as an important source of nutrients to the students; and second, they expressed concern that chocolate milk removal might lead to negative student behaviors. Third, students expressed varied views toward chocolate milk removal and no students rebelled following

	student/staff behaviors in a rural elementary school. *J Sch Nurs.* 2017; 33(4): 285-298.						chocolate milk removal. Fourth, students reported selecting beverages based on familiarity and health impact while staff focused on the role that beverage placement and appearance played. A final theme focused on the short lunch period and limited amount of food and beverage consumed regardless of the presence or absence of chocolate milk.
Demment et al., 2015	Demment M, Wells N, Olson C. Rural middle school nutrition and physical activity environments and the change in body mass index during adolescence. *J Sch Health.* 2015;85(2):100-108.	281 students from 17 middle schools; 53% male and 47% female; 43% were low income at birth and 57% were not low income at birth; 96% White, 43% of students were < 185% of the poverty line.	The school nutrition and PA environment assessment tool based on the School Health Policies and Programs Study questionnaire and the Eat Well Be Active questionnaire to assess environmental factors that affect students' nutrition and PA; issues that were assessed include school meal quality/availability, food fund-raising policies, general HE promotion, quality of physical education, sport offerings/participation, and general PA promotion.	Schools	**X**	**X**	BMI levels from students in different socioeconomic backgrounds in grades six to eight were compared. Low-income students with lower BMI z-scores were more likely to attend a school with a better physical education program. The study also found that although a school may have a good physical education program and students with low BMI z-scores, it does not necessarily have low-income students. School nutrition and physical education programs may have different effects on children's health depending on their socioeconomic status.
Deshpande et al., 2005	Deshpande AD, Baker EA, Lovegreen SL, Brownson RC. Environmental correlates of physical activity among individuals with diabetes in the rural midwest. *Diabetes Care.* 2005;28(5):1012-1018.	Population for no current PA: 102; 26.5% male, 73.5% female; 35.3% less than high school, 28.4% high school/GED, 25.5% technical school/some college, 4.9% college graduate, 5.9% postgraduate, 94.1% White, 2.9%	Modified version of Behavioral Risk Factor Surveillance System (BRFSS)-random digit dial telephone survey to identify patients' PA level, demographic characteristics, physician advice on exercising, community facility use that facilitate PA and if the community has several places to engage in PA.	Parks; recreation facilities; schools; trails		**X**	Facility use, distance to facilities, community characteristics/esthetics were among the environmental characteristics associated with PA. Using a community facility was associated with regular PA. 1 or 2 facilities 47.1%, 3 or more 19.1%. Use of parks, recreation centers, walking trails, schools, and health clubs. Associations of recreation center use

		Black, 1% Hispanic, 2% Others. Population for some current PA: 36; 19.4% male, 80.6% female, 33.3% less than high school, 33.3% high school/ GED, 16.7% technical school/ some college, 8.3% college graduate, 8.3% postgraduate; 97.2% White, 2.8% Others. Population for regular current PA: 136, 32.4% male, 67.6% female; 23.5% less than high school, 33.8% high school/ GED, 20.6% technical school/ some college, 15.4% college graduate, 6.6% postgraduate; 95.6% White, 1.5% Black, 0.7% Hispanic, 2.2% Others.					(Prevalence odds ratios POR 12.2, 95% CI 2.74 –54.27) and health club use (7.48,2.12–26.37) with regular PA were strongest.
Dev et al., 2020*	Dev DA, Garcia AS, Dzewaltowski DA, et al. Provider reported implementation of nutrition-related practices in childcare centers and family childcare homes in rural and urban Nebraska. *Prev Med*	Urban Child Care Centers (CCC) n=119 and Family Child Care Home (FCCH) n=472; American Indian or Alaskan Native in CCC 0.68(SD 2.698) and in FCCH 0.20 (SD 0.632), Asian in CCC 2.32 (SD	Healthy Children, Healthy State Questionnaire, an 86-paper survey, on implementing nutrition best practices, implementation difficulty, and barriers related to serving foods and beverages as well as mealtime practices.	Childcare		**X**	The most frequently selected barriers across all childcare settings were children would not like the taste of healthier foods, limited time to shop, and not enough money to cover the cost of serving healthier meals and snacks. Not having enough money for healthier foods is experienced significantly more by rural childcare centers and family

	Rep. 2020;17:101021.	2.871) and in FCCH 0.26 (SD 0.632), Black or African American in CCC 10.79 (SD 16.846) and in SCCH 1.46 (SD 2.653), Native Hawaiian or Pacific Islander in CCC 0.47 (SD 1.181) and in FCCH 0.09(SD 0.407), White or Caucasian in CCC 48.64(SD 46.985) and in FCCH 6.74 (SD 2.809), Mixed Race in CCC 8.32(SD 7.369) and in FCCH 1.32(SD 1.698), Other in CCC 4.31 (SD 7.445) and in FCCH 0.38 (SD 1.638). Rural Child Care Centers (CCC) n=81 and Family Child Care Home (FCCH) n=498)					childcare homes than urban childcare centers.
Devine et al., 2012	Devine CM, Maley M, Farrell TJ, Warren B, Sadigov S, Carroll J. Process evaluation of an environmental walking and healthy eating pilot in small rural worksites. *Eval Program Plann.* 2012;35(1):88-96.	Site A n=76: 84% women; 65(86%) high school GED/ some college, 10(13%) college 4+ years, 1(1%) not reported; 74(97%) White, 1(1%) Black, 1(1%) not reported. Site B n=16: 88% women; 15 (94%) White, 1 (6%) not reported; 2 (13%)	A baseline survey, qualitative interviews, focus groups for describing how the Small Steps program worked at workplace and participants' feeling about the intervention as well as any worksite context during the intervention.	Workplace		**X**	**X**	Small Steps are Easier Together, an intervention program, allowed groups of workers at different work sites to make changes to their environment that encourage healthy choices. Intervention reach ranged from 19% to 96% for walking and 16–96% for healthy food choices. Median reach was 26% for walking and 21% for HE overall sites. On average, Sites B and E were high reach sites; these

		high school GED/ some college, 13 (81%) college 4+ years, 1 (6%) not reported; 15 (94%) White, 1 (6%) not reported. Site C n=75: 95% women; 46(61%) high school GED/ some college, 28(37%) college 4+ years, 1(1%) not reported; 71 (95%) White, 1 (1%) Black, 2 (3%) Other, 1 (1%) not reported. Site D n= 36: 86% women; 7(19%) high school/ GED or some college, 29(81%) college 4+ years, 35(97%) White, 1(3%) not reported. Site E n=23: 83% women; 9 (39%) high school GED or some college, 14(61%) college 4+ years; 23(100%) White				were also the smallest sites overall. Sites A, C, and D were low reach sites. Emergent elements of participant-reported dose received included: active leadership, visible environmental changes, critical mass of participants, public display of accomplishments, accountability to co-workers, and group decision making. Participants at sites with high reach and dose were significantly more likely than sites with low reach and dose to achieve intervention goals. Dose received is participant perceptions of intervention elements.
Dewitt et al., 2017	DeWitt E, McGladrey M, Liu E, et al. A Community-based marketing campaign at farmers markets to encourage fruit and vegetable purchases in rural counties with high rates of obesity, Kentucky,	In year 1, 112 participants, 77% female, 24% graduated from high school or completed general equivalency degree, 97% White; in year 2, 139 participants, 88% female, 25% graduated from	Survey included questions about participants eating habits; questions include "*Does having recipe cards available at the market influence your buying of fruits and vegetables while at the market?*" "*Did having the recipe sample available contribute to your buying the ingredients for the recipe you sampled?*" "*If you took a food sample, did that food sample*	Food retail	**X**	Awareness of the Plate it up Kentucky Proud (PIUKP) program was associated with a willingness to prepare a healthy recipe at home. Participants who heard about PIUKP and took a food sample were 2.47 (95% confidence interval, 1.30–4.70) times as likely as those who had not heard about PIUKP to want to prepare the food item at home.

	2015-2016. *Prev Chronic Dis.* 2017;14:E72.	high school or completed general equivalency degree, 96% White.	*make you want to prepare that food at home?*"				This study highlights how a community-based marketing campaign may be effective at influencing shopping behaviors of rural residents, especially when implemented over an extended period of time (our 2-year study period).
Dinkel et al., 2018	Dinkel D, Dev D, Guo Y, et al. Improving the physical activity and outdoor play environment of family child care homes in Nebraska through Go Nutrition and PA Self-Assessment for child care. *J Phys Act Health.* 2018;15(10):730-736.	201 providers completed assessments for 2068 children; 89 (44.30%) in urban classification, 112 (55.70%) in rural classification.	Two of the Go Nutrition and PA Self-Assessment in Child Care (5 Go NAP SACC) sections; the Infant and Child PA section included 20 questions based on 5 categories (time provided, indoor play environment, daily practices, educational and professional development, and policy) and the Outdoor Play and Learning section included 15 questions based on 4 categories (outdoor playtime, outdoor play environment, educational and professional development, and policy).	Community gardens; recreation facilities; childcare		**X**	Rural providers reported lower practices regarding availability of indoor portable play equipment, supervision/verbal encouragement/joining in children's activities, using PA during daily routines/transitions/activities, and offering families info on children's PA. However rural providers were more likely to have gardening space large enough to grow fruit and vegetables
Dye & Cason, 2005	Dye CJ, Cason KL. Perceptions of older, low-income women about increasing intake of fruits and vegetables. *J Nutr Elder.* 2005;25(1):21-41.	14 (50%) less than high school, 6 (21.4%) high school graduate, 1 (3.6%) some college, 1 (3.6%) college graduate; 27 (96.4%) White; 1 (3.6%) African American	Focus groups; key questions include "*What are some of the problems with eating more fruits and vegetables each day? What do you think the benefits of eating more fruits and vegetables may be? What might happen if women like you do not eat five servings of fruits and vegetables each day? How confident do you think women like you would be about eating more fruits and vegetables? What could help motivate older women to eat more fruits and vegetables? What kind of information do older women need about eating more fruits and vegetables each day? Where is the best place for*	Food retail; food assistance programs	**X**		Barriers to eating fruits and vegetables included difficulty in getting fruits and vegetables when eating out. Eating alone also contributed to not eating healthy, as women were not enjoying food by themselves. Women on assistance programs such as "Meals on Wheels" don't have "a variety of vegetables provided", making them tired of consuming the same produce.

			women like you to get this kind of information?"			
Edwards et al., 2011	Edwards MB, Kanters MA, Bocarro JN. Opportunities for extracurricular physical activity in North Carolina middle schools. *J Phys Act Health*. 2011; 8(5): 597-605.	The completed questionnaires represented 61.4% of all North Carolina middle schools. Participating schools were 37.2% rural, 29.5% rural fringe, 13.2% suburban, and 20.0% urban. Schools had 40.4% minority and 47.4% economically disadvantage d populations.	A web-based questionnaire was adapted from the School Health Policies and Program Study 2006 (SHPPS): School-Level Questionnaire Modules 1 and 2. For the purposes of this study, SHPPS items were included that asked school personnel to document the availability of programs, facilities, and supporting policies at their schools. Measures for middle school physical activity pro-grams included a checklist of different types of specific extracurricular activities that could be classified as interscholastic sports, intramural sports or noncompetitive physical activities at each school and whether each activity was offered to boys, girls, or as a coeducational activity.	Schools	**X**	Nearly all schools offered interscholastic sports while fewer than half offered intramurals or noncompetitive activities to students. "Open gym" was offered at only 35% of schools, while 24% of schools offered extracurricular activities to students with disabilities. Overall, 43.4% of schools offered special transportation to students who participated in some extracurricular physical activities. Schools in rural areas generally offered fewer programs and had fewer supports than schools located in more urbanized areas. Over two-thirds of rural schools offered no extracurricular programs other than interscholastic sports.
Edwards et al., 2013	Edwards MB, Bocarro JN, Kanters MA. Place disparities in supportive environments for extracurricular physical activity in North Carolina middle schools. *Youth Soc.* 2012; 45 (2): 265-285.	The completed questionnaires represented 61.4% of all North Carolina middle schools. Participating schools were 37.2% rural, 29.5% rural fringe, 13.2% suburban, and 20.0% urban. Schools had 40.0% minority and 47.2% economically disadvantage d populations	Respondents were asked to indicate each activity offered in their extracurricular program from a checklist. The number of activities offered at each school was aggregated separately for interscholastic sports, intramural sports, and PA clubs. An indicator variable was used to record the availability of open gym/free play. Respondents documented the availability and quantity of specific indoor and outdoor facilities. Respondents also indicated whether their school provided special transportation to school or home for students who participate in	Schools	**X**	Multilevel models were estimated using a composite index for supportive environments as the dependent variable and school compositional factors, economic resources, and community social factors as explanatory variables. Study findings suggested adolescents living in socioeconomically deprived rural areas had fewer environmental resources for extracurricular physical activity. Rural schools in poor areas of the state with high racial heterogeneity demonstrated the lowest environmental support.

			extracurricular PA and whether their school offered any extracurricular PA programs for students with special needs. Respondents were asked if community youth were allowed to use any of their school's facilities for community-sponsored sports teams, community-sponsored PA classes, or free play outside of school hours or when school is not in session. Participants were also asked if, over the course of a school year, their school partnered with any community organizations to organize or promote extracurricular PA.			Reduced availability of supportive school environments may be one factor contributing to physical inactivity in the state.
Edwards et al., 2014	Edwards MB, Theriault DS, Shores KA, Melton KM. Promoting youth PA in rural southern communities: practitioner perceptions of environmental opportunities and barriers. *J Rural Health.* 2014;30(4):379-387.	Population was 27,281 in Ridge County Plains County Appalachia; 21,362 in Black Belt; 9,418,736 in North Carolina. Land area classified as rural was 98.7% in Ridge County, 100% in Plains County and 90.5% in North Carolina. 17.7% received at least a high school diploma in Ridge County, 11.2% in Plains County and 26.5% in North Carolina. 96.5% non-Hispanic white in Ridge County, 51.7% in Plains County and 71.3% in North Carolina; Black, non-	Interviews with key informants; questions were divided into 3 categories, community background "*Tell me about your community. What are the important social groups in your community? What are the primary benefits of living here? What are the biggest challenges your community is facing?*" Questions related to opportunities/barriers for PA: "*What comes to mind when you think about resources, programs, and policies available for PA for young people in your community (clarify definitions)? How do you think the opportunities for PA in your community differ from those in other parts of the state? Are there any groups of kids who can't or don't participate in PA? What do you think prevents their participation?*" Questions related to	Churches; natural environments ; parks; recreation facilities; schools	**X**	Summer camp programs, ball sports, skateboarding parks, disc golf course and facilities including parks, schools and churches seen as opportunities for youth PA. Transportation to activities was identified as a barrier. Hunting, fishing, and kayaking identified as activities for PA in rural areas. Physical distance restricted active transportation and informal play. Rural environment allowed for better access to natural resources for active recreation. Opportunities for PA were limited to structured and organized programs. Schools listed as primary location for PA among informants.

		Hispanic 0.9% in Ridge County, 38.6% in Plains County and 22.4% in North Carolina; 4.8% Hispanic in Ridge County, 13.5% in Plains County and 8.1% in North Carolina	community characteristics helpful or challenging for PA include: "*What characteristics of your community are most helpful for providing new opportunities for youth PA (eg, developing or maintaining facilities/programs)? What local traditions most influence the types of PA opportunities in your community? If you wanted to add new PA opportunities or reallocate existing community resources to promote youth PA, what might be the most significant barriers?*"				
Erinosho et al., 2018	Erinosho T, Vaughn A, Hales D, Mazzucca S, Gizlice Z, Treadway C, Kelly A, Ward D. The quality of nutrition and physical activity environments of child-care centers across three states in the southern U.S. *Preventive Medicine*. 2018; 113: 95-101.	Of the 354 centers, 154 (44%) were from Georgia, 103 (29%) were from Kentucky, and 97 (27%) were from Mississippi, representing approximately 6%–7% of the total number of centers in each of the states. Fifty-nine percent were rural centers, versus 41% that were urban.	Child-care centers' nutrition and PA environments were assessed using the Environment and Policy Assessment and Observation Self-Report (EPAO-SR) tool.	Childcare		**X**	**X**	Centers' overall PA score was, on average, 8.8 (±1.8) out of 18. The overall PA score did not differ between rural and urban centers. Child and Adult Care Food Program (CACFP) and Head Start centers had significantly higher scores, compared to their counterparts, thus demonstrating higher-quality PA environments in CACFP centers, compared to non-CACFP (8.9 ± 1.8 versus 8.3 ± 1.9, $p < 0.01$), and in Head Start centers, compared to non-Head Start (9.6 ± 1.5 versus 8.6 ± 1.9, $p < 0.01$). At the domain level, CACFP centers reported healthier environments ($p < 0.05$) in one of the six PA domains, specifically, PA training and education. In contrast, Head Start centers demonstrated healthier environments ($p < 0.05$) in four of the six

							physical activity domains: indoor play environment, PA and screen practices, PA training and education, and PA and screen policy.
Erinosho et al., 2019	Erinosho T, Hales D, Vaughn A, Gizlice Z, Ward D. The Quality of Nutrition and Physical Activity Environments of Family Child-Care Homes in a State in the Southern United States. *Journal of the Academy of Nutrition and Dietetics*. 2019; 119(6): 991-998.	48% (n=64) of the family child-care home (FCCH)s were in urban areas and 52% (n=70) were rural. Forty-two percent (n=56) participated in the Child and Adult Care Food Program (CACFP), compared with 58% (n=77) that were nonparticipating homes. On average, 4.2±2.6 children younger than age 6 years were enrolled at the homes.	A modified version of the Environment and Policy Assessment and Observation-Self Report (EPAO-SR) tool was used to assess the nutrition and PA environment of FCCHs.	Childcare		**X**	**X**	When examining domain-specific components of the nutrition environment, the average scores across most components (foods provided at lunch, feeding practices, feeding environment, nutrition education, and professional development) were low, with FCCHs attaining average scores <2.0 out of 3. The average scores attained by FCCHs on the beverages provided at lunch (2.2±0.7) domain and the nutrition policy domain (2.6±0.6) were higher, indicating compliance with a greater number of best practices in these domains. Domain-specific nutrition environment scores did not differ significantly (P>0.05) between rural vs urban FCCHs. When looking at components of the PA domain, the average scores for six of the eight components (ie, active play time provided, screen time provided, indoor play equipment, outdoor play environment, PA education and professional development, and PA policy) were also low, with FCCHs attaining average scores <2.0 out of 3. In contrast, higher scores were obtained by FCCHs on the PA practices domain (2.1±0.7) and the screen time practices domain (2.1±1.1), indicating

							compliance with a greater number of best practices in the respective domains.
Escoffery et al., 2011	Escoffery C, Kegler MC, Alcantara I, Wilson M, Glanz K. A qualitative examination of the role of small, rural worksites in obesity prevention. *Prev Chronic Dis.* 2011;8(4):A75	33 respondents; 19 men; 6 High school graduate or less, 12 some college or college graduate; 11 White, 8 African American; 14 women; 8 high school graduate or less, 6 some college or college graduate; 7 White, 7 African American	Semi-structured in-depth interviews that explored how social and physical environments in the home, work, and church influence healthful eating, participation in PA, and tobacco use. Only themes regarding how the worksite affects healthful eating and participation in PA are reported here.	Workplace	**X**	**X**	This study documented practices that encourage healthful diets and PA. It evaluated responses from 33 employees over 55 years old, of small, rural worksites. Participants indicated the lack of vending machines and cafeterias were a facilitator to HE, and the presence of unhealthful foods as a barrier. Physically active jobs and walking to work were facilitators to PA, but limited space and sedentary jobs were barriers.
Eyler & Vest, 2002	Eyler AA, Vest JR. Environmental and policy factors related to physical activity in rural white women. *Women Health.* 2002;36(2):111-121.	33 women; 50% had some college education; 60%were employed in full/part time job	6 focus groups to identify social environment, guilt and family responsibility, social support, and environmental and policy barriers.	Recreational facilities; streets; workplace		**X**	All women believed they had fewer opportunities for exercise because they lived in a rural area, exercise facilities were few and not close to home. Available gyms and exercise facilities were perceived to be geared toward men and women expressed a desire for a "women's only" place to exercise. Larger towns have exercise programs, but not feasible for women to travel daily. Lack of sidewalks, uneven pavements, and traffic dissuaded walking. Personal safety concerns and poor lighting dissuaded participating in outdoor physical activities. Women suggested work-site interventions with onsite exercise facilities or time off work to exercise would encourage exercising.

Eyler, 2003	Eyler AA. Personal, social, and environmental correlates of physical activity in rural Midwestern white women. *Am J Prev Med.* 2003;25(3 Suppl 1):86-92.	1000 women; 32.5% (326) college graduate, 32.1% (322) some college, 30.6% (307) high school/GED, 4.3% (43) less than high school	Women and PA Survey, based on previous research from Women's Cardiovascular Health Network to assess PA status and personal, social environmental, and physical environmental factors.	Recreational facilities; streets		**X**	Women gave three main barriers to exercise: remoteness of rural environment, lack of recreational facilities, and not enough sidewalks. 63.2% reported no presence of sidewalks, 28.2% reported presence of unattended doffs as a big/somewhat of a problem, 23.1% reported no places to exercise, 47.3% reported to places within walking distance. 50.8% reported poor/very poor street lighting at night, 22.5% reported fair street lighting at night. Women who reported "fair" street lighting at night were less likely to meet PA recommendations that women who reported "poor" street lighting at night
Findholt, 2011	Findholt NE, Michael YL, Davis MM. Photovoice engages rural youth in childhood obesity prevention. *Public Health Nurs.* 2011;28(2):186-192.	Six high school students, one from each community in Union County; 4 female, 2 males; all White	Photovoice to engage youth in the community assessment, obtain their perspective of assists and barriers to HE and PA; build support for future intervention by raising awareness of community conditions affecting diet and PA.	Recreation facilities; food retail; natural environments	**X**	**X**	Influences on PA and diets: structural features, the natural surroundings, economic conditions, community norms and policies pertaining to PA and food. Environmental conditions - picture of a single refrigerated shelf with fewer than two dozen vegetables to show that limited access to fresh and healthy food was a significant barrier to HE in small communities. Another student photographed a tennis court with grass growing through cracks in the asphalt to document that recreational facilities were not being maintained.
Findholt, 2011	Findholt NE, Michael YL, Jerofke LJ,	Union County population: N=51936; median	In-depth informant interviews with school principals, school food service managers,	Natural environments ; streets;	**X**	**X**	Facilitators for PA: popularity of youth sports and proximity to natural environment.

	Brogoitti VW. Environmental influences on children's physical activity and eating habits in a rural Oregon County. *Am J Health Promot.* 2011;26(2):e74-85.	household income is $39,873; 94% White	city/county government officials on barriers and facilitators to HE and PA. System for Observing Play and Leisure Activity in Youth (SOPLAY) to record child PA and photovoice to document community assets and needs. PA Resource Assessment for environmental audits.	recreation facilities; food retail; schools			Barriers to PA: limited access to recreational resources especially indoor resources; street and traffic safety hazards; and fear of strangers. Barriers for HE: limited access to healthy foods, convenience stores near schools, Facilitators for HE: agricultural setting, popularity of gardening
Flamm, 2011	Flamm L. Barriers to EBT use at farmers' markets: Lessons in empowerment evaluation from rural Ohio. *J Hunger Environ Nutr.* 2011;6(1):54-63.	9 community members; all low income	Interviews to identify barriers to the electronic benefit transfer at Ohio Farmers Market Uptown regarding price, interest, familiarity, comfort, internal and external access, demand and other variables.	Food retail		**X**	This study is meant to identify barriers that keep electronic benefit transfer (EBT), a food assistance program that replaced food stamps, from being used as payment for local goods, such as the goods sold in farmers' markets. Results suggest that lack of knowledge regarding payment options and misperceptions about the affordability of local goods is at the root of the problem.
Flood, 2017	Flood JL. Breastfeeding supports and services in rural Hawaii: Perspectives of community healthcare workers. *Nurs Res Pract.* 2017;2017:6041462.	23 health care workers mothers and infants; educational background: nurses, dieticians, medical, nursing assistants.	Ethnographic interviews to describe patterns of BF support and services	Hospitals; workplace	**X**		Return to work a barrier to BF. Lack of health care resources in rural areas was also noted as a barrier. Hospital policy (e.g., giving a baby a bottle after birth; early discharge) was described as a barrier. Additionally, a lack of supportive community environments for breast feeding (e.g., Baby Friendly hospital; advertisements in local settings). Lack of opportunities for referral to other specialists; barrier to BF.
Flower et al., 2008	Flower KB, Willoughby M, Cadigan RJ, Perrin EM, Randolph G. Understanding	1292 women from North Carolina (NC) and Pennsylvania (PA); low-income in NC/	Ethnographic interviews combining quantitative and qualitative data from Family Life Project and demographic information including maternal	Workplace	**X**		Perceived work setting incompatible for BF. Returning to work was a decision that prompted formula feeding. Likewise, maternal

	breastfeeding initiation and continuation in rural communities: A combined qualitative/quantitative approach. *Matern Child Health J.* 2008;12(3):402-414.	(n= 168) and not low-income (n= 86) participants, low-income in PA (n= 344) and not low-income (n= 175) participants. Mother has high school degree/GED/ 83%, mother have college degree (4 years)/ 20%, mother employed/ 41% African Americans in NC (n = 521) and Others predominantly Caucasian, PA sample predominantly Caucasian	and infant health factors and health services to predict BF initiation and continuation			employment associated with less BF (initiation and duration).
Friedman et al., 2014*	Friedman DB, Freedman DA, Choi SK, et al. Provider communication and role modeling related to patients' perceptions and use of a federally qualified health center-based farmers' market. *Health Promot Pract.* 2014;15(2):288-297.	13 providers; 44 diabetic patients; 8 (18.2%) male, 36 (81.8%) females; 14 (31.2%) less than high school, 18 (40.9%) high school graduate or GED, 7 (15.9%) some college or technical college, 5 (11.4%) college graduate or graduate school; 41 (93.2%) African American, 3 (6.8%) White.	Patient Interviews and Provider Surveys; questions include *"About how many prescriptions did you give out? (none, <5, 5-10, 11-24, 25+); Did you target your prescriptions to any specific group? (yes/no) If yes, which groups? How did your patients respond to the prescription program? (very positively to not very positively); Did you typically give the prescription in conjunction with other prescriptions? (yes/no); How did you typically present the prescription to your patients? (open ended); In general, how easy was it to give out the prescription? What made it easier for you to use the prescription? What made it*	Food retail	**X**	Participants also agreed that shopping at the market, as opposed to local stores, provides them with an important opportunity to interact with their health care providers outside of medical appointments. The majority of providers (66.7%) thought patients responded to the prescription program 'positively' or 'very positively' and that it was 'easy' or 'very easy' to administer the program especially when they had access to pre-filled prescription pads. limited market hours for patients to use the prescriptions, limited time with patients to discuss the market, and forgetting to have the prescription pads with

			difficult for you to use the prescription? (options provided); What could be done to improve the prescription program? (open ended); How important is it that there is a farmers' market at FHC in the future? (very important to not at all important); How much do you agree with the following statement—The farmers' market provided important health benefits to PATIENTS at FHC and How much do you agree with the following statement—The farmers' market provided important health benefits to STAFF at FHC (strongly agree to strongly disagree); How often did you shop at the farmers' market? (never to every week)."			them during appointments were identified as barriers for the program.
Gamble et al., 2017*	Gamble A, Chatfield SL, Cormack ML, Jr., Hallam JS. Not enough time in the day: A qualitative assessment of in-school physical activity policy as viewed by administrators, teachers, and students. *J Sch Health.* 2017;87(1):21-28.	4 total focus group discussions; 2 with principals and physical education teachers; 2 with students in 4th and 5th grades.	Semi-structured focus groups discussed in-school PA (ISPA) opportunities, barriers, facilitators to implementing in schools' PA.	Schools	**X**	Some participants suggested methods such as creative programming and increased professional development along with requesting external funding. Some students identified school as the preferred PA setting compared to home, because the teacher was there to show them how to play games and other students are present. School was identified as a key PA resource for children.
Gangeness, 2010	Gangeness JE. Adaptations to achieve physical activity in rural communities. *West J Nurs Res.* 2010;32(3):401-419.	Four women focus groups (n= 26), city council focus groups (two groups n= 8), city administrator and clerk interviews (n= 2), women's	Focus groups that discussed resources, barriers and adaptations to PA.	Trails; streets	**X**	Barriers to PA included a lack of a paved trail and limited or poorly maintained sidewalk systems. Traffic control was perceived as affecting PA for rural women. Rural women engaged in physical activities

		verification individual interviews (n= 2), individuals with perceived powers (n=7).					by adapting to the available built environment.
Garasky et al., 2006	Garasky S, Morton LW, Greder KA. The effects of the local food environment and social support on rural food insecurity. *J Hunger Environ Nutr.* 2006;1(1):83-103.	562 completed surveys; mean 0.575 (SD 0.495) of greater than high school; mean income more than $42,000	Surveys including the following question *"Q1. The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more. Was that: Often true, sometimes true, or never true? Q2. (I/we) couldn't afford to eat balanced meals. Was that: Often true, sometimes true, or never true? Q3. In the last 12 months did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food? (yes or no) Q4. If yes to Q3, how often did this happen? Almost every month ,some months but not every month, or in only 1 or 2 months.Q5.If yes to Q3,in the last 12 months, did you ever eat less than you felt you should have because there wasn't enough money to buy food? (yes or no) Q6. If yes to Q3, in the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food? (yes or no)"*	Food retail; local food producers; home environment		**X**	High local food prices and an inadequate number of food stores are viewed by families as obstacles to meeting their food needs. Some households counteract the local environment by shopping outside the county, farming, or relying on informal support networks. Transportation difficulties exacerbate food acquisition problems, while institutional support provided through food programs is not always effective.
Gilbert et al., 2019	Gilbert AS, Duncan DD, Beck AM, Eyler AA, Brownson RC. A qualitative study identifying barriers and facilitators of PA in rural communities. *J Environ Public*	62 residents; 32 stakeholders, 13 non trail users, 17 trail users; 71% (n=44) female, n=18 (29%) male; (79%) n= 41 Caucasian, (21%) n=13 African American.	Key informant interviews: questions include "*What keeps you from using the trail? Does weather keep you from using the trail? Can you think of anything that would encourage you to use a walking trail? What do you like most about the trail? Do you normally walk*	Trails		**X**	Environmental barriers such as lack of trail amenities, weather, location, and accessibility. Safety and trail amenities were included as Policy System Environmental facilitators.

	Health. 2019;2019:7298692		*alone or with others at the trail?*"			
Griffin et al., 2011	Griffin SF, Williams JE, Hickman P, Kirchner A, Spitler H. A university, community coalition, and town partnership to promote walking. *J Public Health Manag Pract.* 2011;17(4):358-362.	9 community leaders from Pendleton, South Carolina of whom 25% do not have a high school diploma. 65% white, 33% African American.	Interviews to identify themes related to physical and social environment factors, perceptions about working with the students, and social norms for walking locally. A modified version of the sidewalk assessment tool to assess physical environment characteristics such as cleanliness, existence of obstacles, and presence and condition of shrubbery, trees, and signage.	Trails	**X**	Community leaders believed walking trails helped promote the town's image as a walkable town but were unsure if they affected the local's walking habits. Students and the Pendleton Pride in Motion (PPIM) coalition members mapped 3 walking trails (6 miles total) of walkable trail. Other environmental characteristics, include placing signage on 2 of the 3 walking trails. Six community events promoted walking trails and walking by engaging more than 400 residents. Aesthetic scores, including lack of graffiti, pleasing scenery, and minimal litter were always high for 2 of the 3 trails and students regularly helped maintain the trails.
Gustafson et al., 2017	Gustafson A, Jilcott Pitts S, McDonald J, et al. Direct Effects of the home, school, and consumer food environments on the association between food purchasing patterns and dietary intake among rural adolescents in Kentucky and North Carolina, 2017. *Int J Environ Res Public Health.* 2017;14(10).	N= 432 adolescents; 41% female, 59% male; 62% White, 26% Black, 12% Others	A questionnaire that included items to assess food purchasing patterns, perceived community food environment questions, and questions to assess the home availability of various types of foods and beverages. Consumer food environment was assessed by the Nutrition Environment Measures in Stores, Restaurants, and Convenience Stores. The National Health and Nutrition Examination Survey that asked about the frequency of consuming fruits, vegetables and added sugar; "H*ow often do you consume fruits?"; "How often do you consume vegetables not including*	Home environment; schools	**X**	This study evaluated barriers to healthy lifestyles in rural communities. The study asked rural residents in Kentucky to report how available healthy foods were to them and found that 42% of the adolescents indicated fruits and vegetables were never available in the home; 29% indicated junk food was never available in the home food environment; 35% indicated soda was never available in the home. Those who reported always having fruits and vegetables in the home consumed more servings of fruits and vegetables [OR = 0.31 cups (95% CI 0.22, 0.44)] compared to those who

			French fries or other fried potatoes"; "*How often do you drink regular soda?*"				reported never having fruits and vegetables in the home. Adolescents attending a school with a low healthy food availability score consumed fewer servings of fruits and vegetables [−0.001 (95% CI −0.001, 0.0001)] compared to those attending a school with a high healthy food availability score.
Gustafson et al., 2018	Gustafson A, McGladrey M, Liu E, et al. Examining key stakeholder and community residents' understanding of environmental influences to inform place-based interventions to reduce obesity in rural communities, Kentucky 2015. *J Rural Health.* 2018;34(4):388-395.	Total participants n=756; 76% female; 97% white.	Sociodemographic survey using Behavioral Risk Factor Surveillance System (BRFSS) questions. Survey items indicated whether respondents shopped at (1) supercenters; (2) supermarkets or large grocery stores; or (3) farmers' markets, community-supported agriculture, or roadside stands. Three questions determined residents' perceptions of resources in their communities, including: (1) concern about the problem of obesity/nutrition/PA in their community (response options: "not at all," "minor," "moderate," and "serious"); (2) awareness of programming or activities regarding obesity/nutrition/PA in their community (response options: "yes" or "no"); and (3) access to information about obesity/PA in their community (response options: "very difficult," "difficult," "neutral," "easy," and "very easy."). In addition, coalitions of community stakeholders led by Family and Consumer Sciences (FCS) Extension agents in each of the 6 counties were convened to assess their counties' needs and	Food retail; streets; trails		**X**	**X**	Rural residents are concerned about access to healthy foods and PA resources. This study analyzed what influences rural residents to make healthy decisions. It found many barriers to healthy lifestyles. Such barriers include a lack of access to fruits and vegetables and living in areas with limited sidewalks or trails. Although there are gaps in data about community attitudes related to environmental issues, it is clear there is a desire to improve the overall health of rural residents by increasing available resources.

			assets to inform subsequent intervention implementation.				
Gustafson et al., 2019	Gustafson A, Ng SW, Jilcott Pitts S. The association between the "Plate it Up Kentucky" supermarket intervention and changes in grocery shopping practices among rural residents. *Transl Behav Med.* 2019;9(5):865-874.	Only baseline data were extracted: Control: 131participants; 60% females; 22% did not graduate high school, 47% high school graduate or GED, 31% at least some college; 13% Hispanic/ Latino, 11% African American, 76% White. Intervention: 183 participants; 39% females; 19% did not graduate high school 54% high school graduate or GED 27% at least some college; 9% African American, 91% White.	Customer intercept surveys used Behavioral Risk Factor Surveillance System (BRFSS) to measure diet. Questions were also included about shoppinh habits and local food outlets: *"About how often do you shop at this store? Over the past 24 hours how many servings of fruit did you eat? and "Over the past 24 hours how many servings of vegetables did you eat?".* *The National Cancer Institute (NCI) Fruit and Vegetable screener, which included questions about (1) 100% PURE fruit juices? Do not include fruit-flavored drinks with added sugar or fruit juice you made at home and added sugar to. Only include 100% juice; (2) Not counting juice, how many times per day, week, or month did you eat fruit? Count fresh, frozen, or canned fruit; (3) Did you eat cooked or canned beans, such as refried, baked, black, garbanzo beans, beans in soup, soybeans, edamame, tofu or lentils. Do NOT include long green beans; (4) did you eat dark green vegetables, for example, broccoli or dark leafy greens including romaine, chard, collard greens or spinach? (5) did you eat orange-colored vegetables such as sweet potatoes, pumpkin, winter squash, or carrots?; (6) did you eat OTHER vegetables?"*	Food retail		**X**	An intervention program, including in-store marketing, targeted rural supermarkets to improve fruit and vegetable consumption. The key factor on store choice was liking the food that is stocked and was significant post-intervention and across time periods. Post-intervention, there was a significant difference between control and intervention store customers in terms of percentage spent on fruits and vegetables (12% spent among control store customers versus 20% spent among intervention store customers). In-store marketing campaigns among rural super-markets may help improve the healthfulness of food and beverage purchases.

Gustafson et al., 2019	Gustafson A, McGladrey M, Stephenson T, et al. Community-wide efforts to improve the consumer food environment and physical activity resources in rural Kentucky. *Prev Chronic Dis.* 2019;16:E07.	Year 1 (n = 741); 555 (75%) female; 200 (27%) high school graduate or GED, 163 (22%) some college; Year 2 (n=1807); 343 (19%) female; 542 (30%) high school graduate or GED, 415 (23%) some college.	Random-digit–dial surveys included the questions "*Do you conduct at least 25% of the food shopping per week for your household?*" "*On a typical day, how many servings of fruits or vegetables do you consume?*" "*How often the person engaged in moderate PA*" and "*Where and how often respondents shopped at the following types of food venues: supercenters, supermarkets, and farmers markets or community-supported agriculture gardens.*" Residents' engagement in assessing community food environment and physical activity needs and assets was facilitated by Family Consumer Science (FCS) Extension Agents in each county. Each agent recruited and convened a group of county stakeholders — health care providers and personnel from grocery stores, public health departments, and public libraries — in planning meetings to evaluate community needs and assets.	Food retail; parks; trails		**X**	**X**	High produce costs resulting from geographic remoteness were identified as an unaddressed barrier to accessing fresh food and a contributing factor to obesity. In addition, the lack of safe and affordable resources for being physical active was another factor identified. These insights prioritized the targeting of grocery stores and farmers markets and improving resources that facilitate PA. Healthy recipe samples were offered in stores, produce was included in end-caps, recipes were in children's grocery carts, $5 gas cards were handed out, Fit-Trails installed, park benches added, park bathroom renovated, bike racks added. Rates of interest in HE increased from 14% to 34% in one year. Rates of interest in PA increased from 11% to 29% in one year. Results suggest enhancements of the built food environment were effective in improving fruit and vegetable consumption.
Hampson et al., 2009	Hampson SE, Martin J, Jorgensen J, Barker M. A social marketing approach to improving the nutrition of low-income women and children: An initial focus group study. *Public Health Nutr.* 2009;12(9):1563-1568.	74 women; 3% 0-3grades, 9% completed grades 9–11 grades, 27 % had completed high school, 45% had some college, 16% college graduate, 4 % White (non-Hispanic), 12 % Native American, 8 % Hispanic, 4 %	7 focus groups that discussed the questions "W*here do you shop? What do you like/dislike about these stores? How do you decide what to buy? What do you think about grocery coupons? What do you think about nutrition labels? What do you like/dislike about eating at home? Eating out? When you think of a healthy diet, what comes to mind? What makes it hard for families to eat*	Food retail		**X**		Four broad themes were identified as important factors in grocery shopping, eating out and eating healthfully: cost-consciousness, convenience, social influences, and health issues.

		Black and 2 % Asian.	*healthily? What would make it easier to change the way your family eats?*"			
Hanawa Peterson & Procter, 2019	Hanawa Peterson H, Procter D. A case study of independent grocers in the U.S. rural Midwest. *J Hunger Environ Nutr.* 2018;14(4):466-489.	78.3% Chautauqua County, 95.2% High school graduate or higher 76.5%, 34.3% Bachelors' degree or higher, 91.2% White; Clark County: 96.9% High school graduate or higher, 48.1% Bachelor's degree or higher, 89.9% White, 77.9% Republic County: 95.6% High school graduate or higher, 29.9% Bachelors' degree or higher, 96.9% White; 78.8% Smith county: 98.5% High school graduate or higher 80.0%, 31.6% Bachelor's degree or higher, 98.2% White; Thayer County: 97.5% High school graduate or higher, 32.3% Bachelor's degree or higher, 97.8% White.	Mail in Survey adapted from the 2012 Supermarket Panel Survey. The survey elicited data on store choices, assessment of store attributes, household characteristics, and measurements of social involvement. Store information, including prices for market basket items, was also collected.	Food retail	**X**	There was a consensus around the statement that spending money at locally and independently owned stores can make a difference to their own community, illustrating high levels of their awareness in consciously choosing where to shop. On average, survey participants seemed to suggest that they can live with the product offerings at local grocery stores. Pricing at food outlets was important to the most number of respondents, and other factors identified by more than half of the respondents in each country were cleanliness, customer service, and business hours.
Hartline et al., 2017	Hartline M, Albrecht J, Ritter-Gooder P. A mixed-methods case study of 4 rural schools before initiating	4 managers, 49 food service staff, 152 educators. 94% women.	Scripted interviews, "*What has changed since you have worked in foodservice? How do you see local foods fitting into your school?*	Schools; local food producers	**X**	Survey scores recorded positive attitudes and beliefs for farm-to-school programs (FTSP) among foodservice staff and educators. The overall mean survey scores of

	local Farm-to School-Programs. *Health Behav Policy Rev.* 2017;4(2):150-160.		*What plans have you made regarding local foods? Tell me about the information you have regarding the produce you are interested in purchasing. How will local foods be different in regards to planning and receiving? How will you plan menus around them? How do you expect to receive them? Tell me about the food safety practices you use. Where and what were you trained? How will they change when you bring in local foods? What new experiences will your staff have with the intake of local foods? What new skills will they need? Tell me about the support you have received for the intake of local foods. What interests have teaching, community, and administrative staff expressed?*"			68% and 79% respectively. Food service staff and educators strongly agreed that incorporating local foods into school lunches would be healthy for students (4.30, 4.40, respectively on a scale of 1-5). Opening a healthy snack bar, introducing new or additional dark green/orange vegetables on the menu, and selling of vegetable bedding plants grown in the school's greenhouse by the local Future Farmers of America organization are options that would support healthy changes and choices.
Haynes-Maslow et al., 2018*	Haynes-Maslow L, Osborne I, Jilcott Pitts SB. Best practices and innovative solutions to overcome barriers to delivering policy, systems and environmental changes in rural communities. *Nutrients.* 2018;10(8).	27 participants; 7.4% male, 81.5% females, 70% White Caucasian, 3.7% Native American/American Indian, 7.4% Hispanic or Latino, 7.4% African American or Black	Online Qualtrics survey distributed to SNAP-Ed and in-depth interviews; questions on how long they had worked with SNAP-Ed and in what capacity; what types of PSE initiatives in which their agency was currently engaged; what their favorite PSE initiative was and which initiative they felt was most effective; specific barriers to implementing PSE initiatives in rural communities; strategies that they used to overcome these barriers; future PSE initiatives that they were planning to implementing the following year, and how or if they were evaluating PSE initiatives.	Community gardens; food assistance programs; food retail; schools	**X**	The main barrier mentioned to PSE change was the overall community level of understanding of Policy System and Environment (PSE) implementation, and the interviewees suggested state-wide trainings. SNAP-Ed settings most worked in were schools, food pantries, and farmer's markets. Some strategies mentioned for PSE change in rural communities were garden-based PSE, school wellness programs, healthy food retail programs, farmer's markets PSE, food pantry PSE, community partnerships, and recognizing short term and long-term PSE wins. Many interviewees mentioned PSE initiatives

							related to gardening such as community gardens, school gardens, and personal gardens.
Hearst et al., 2018*	Hearst MO, Shanafelt A, Wang Q, Leduc R, Nanney MS. Altering the school breakfast environment reduces barriers to school breakfast participation among diverse rural youth. *J Sch Health.* 2018;88(1):3-8.	Overall n=904; intervention= 463 students; 254 (54.9%) female, 283 (63.7%) White, 3 (0.7%) Native Hawaiian or other pacific islander, 21 (4.7%) American Indian or Alaska Native, 9 (2.0%) Asian, 23 (5.2%) Black or African American, 105 (23.7%) Mixed, 55 (11.9%) Hispanic or Latino; control= 441 students; 237 (53.7%) female, 314 (74.8%) White, 1 (0.2%) Native Hawaiian or other pacific islander, 2 (0.5%) American Indian or Alaska Native, 10 (2.4%) Asian, 16 (3.8%) Black or African American, 77 (18.3%) Mixed, 47 (10.7%) Hispanic or Latino.	Online survey consisted of Breakfast beliefs: (4 question) including, "*Eating breakfast helps me pay attention in class*." Breakfast barriers (9 questions) including "*I am too busy to eat school breakfast.*" Breakfast benefits: (7 questions) eating breakfast would "*improve math, reading and standardized test scores.*"	Schools; food retail		**X**	In assessing the impact of the food environment around rural schools, school breakfast participation did not replace breakfast purchasing outside of school. However, it was associated with fewer food purchases outside of school throughout the day, specifically fast food after school. The top 5 reported barriers were bad taste of breakfast food; school breakfast taking too much time; students being too busy; and not being hungry in the morning.
Hennessy et al., 2010	Hennessy E, Kraak VI, Hyatt RR, et al. Active living for rural children: community perspectives using PhotoVOICE. *Am J Prev Med.*	Appalachia (Kentucky) population n=1,738, income 15,923, 100% White Caucasian; Central Valley (CA) population n= 3,466, income	PhotoVoice, where photographs of participants were taken to represent their perspectives on the barriers and opportunities to PA for children.	Streets		**X**	Urban design characteristics, safety from traffic, lack of nearby destinations/Lack of sidewalks and high traffic speeds. Participants in two communities reported a greater ability to walk to destinations, which may be due to greater street connectivity and a more

	2010;39(6):537-545.	25,313, 93.7 Hispanic; Mississippi River Delta (MS) population n=2102, income 17,972, 99.7% Black; Southeast (SC) population n= 1,220, income 26,937, 94.0% Black					accessible town center (data not shown).
Hill et al., 2016	Hill JL, Waters CN, Kolivras KN, Estabrooks PA, Zoellner JM. Do the features, amenities, and quality of physical activity resources differ between city and county areas of a large rural region? *Fam Community Health.* 2016;39(4):273-282.	Total sampled residents n=813, 23.9% male and 76.1% female; Less than high school= 17.4%, High school or GED = 36%, 1-3 y college= 30.8%, ≥4 y college= 15.9%; White: 61.7%, Black: 35.5%, Other and multiracial: 2.8%	The Dan River Partnership for a Healthy Community regional surveillance survey is a telephone survey that assess health outcomes and health behaviors. The Neighborhood Environment Walkability Survey (NEWS-A) also assesses perceptions of safety from crime and traffic while walking. Godin-Shephard Leisure Time Exercise Questionnaire measures PA duration within the next 7 days.	Parks; recreation facilities; streets		**X**	Only a third of the participants (28%) met PA recommendations. Overall, residents in rural areas had low perception of safety for PA, and higher accounts of incivilities. PA resources, such as parks and recreation centers, in rural outlets are less available than in urban areas. They are (n=16) and (n=29) respectively for parks. They are also (n=3) and (n=8) respectively for recreation centers. The study lists four strategies to encourage PA despite these barriers. These strategies include shared-use agreements, reducing factors that contribute to incivilities, addressing barriers related to safety from traffic, and increasing resources that encourage PA.
Holston et al., 2020	Holston D, Stroope J, Greene M, Houghtaling B. Perceptions of the food environment and access among predominantly Black low-income residents of rural	44 adults; female (n = 36), male (n=8); Black (n = 41), White (n=2), American Indian (n=1).	Flexible, semi-structured discussion guide that included the questions on how they perceived their food environment, how they acquired food, and about barriers and facilitators to accessing healthy foods.	Food retail; food assistance programs	**X**		Barriers to HE: Store choice decisions influenced by price and quality. Local grocery stores have poor quality fresh foods, which leads to leaving the parish for lower prices and better quality. Lack of transportation or transportation costs also a barrier to HE.

	Louisiana communities. *Int J Environ Res Public Health.* 2020;17(15).					Some will trade Supplemental Nutrition Assistance program (SNAP) benefit coupons for rides to stores. SNAP benefits are minimal, receiving $16-$35 per month, not enough to be effective. Women Infant Children (WIC) approved items vary from store to store making it difficult to shop. Price gouging, stores have high prices when benefits are available, sales occur after benefits are used up. Most participants thought it was feasible to walk or bike to get groceries (although heat, distance, and health issues are barriers to active transportation). Food pantries and community boxes were provided for community, but only when people know about them, not well known in community. The Louisiana Commodity Supplemental Food Program for 60 years and above is utilized but lacks variety in food. Buying clean water takes money away from food.
Honeycutt et al., 2012	Honeycutt S, Carvalho M, Glanz K, Daniel SD, Kegler MC. Research to reality: A process evaluation of a mini-grants program to disseminate evidence-based nutrition programs to rural churches and worksites. *J*	7 sites: 4 churches and 3 worksites; Site A n=650 (church): 70% women, 25% below poverty line, 99.9% African American; site B n=263 (church): 70% women, 20% below poverty line, 99% African American; site C n=85 (church),	Developed process evaluation questions based on RE- AIM (reach, efficacy, adoption, implementation, maintenance) Framework. Implementation, measuring whether or not sites conducted the core elements for their program. Semi structured interview and focus group discussion guides consisted primarily of open-ended questions, with follow-up probes to elicit additional information as needed (with	Churches; workplace	**X**	At 7 sites, implementation was facilitated by the program's fit with the organization's mission, leadership support, the organization's established recognition of health as a priority, in-kind resources provided by the organization, and the involvement of staff and volunteers. Other frequently mentioned facilitators were existing infrastructure, the involvement of health care professionals

	Public Health Manag Pract. 2012;18(5):431-439.	75% women, 60% below poverty line, 100% African American; site D n=75 (church), 40% below poverty line, 96% African American, Site E n=2162 (worksite), 81% women, 34.5% African American; site F n=388 (worksite), 40% women, 60% African American; site G n=94 (worksite), 80% women, 49% African American	site coordinators and organizational leaders).				(e.g., nurses), and the strength of the planning committee. Two churches were unable to conduct a third churchwide nutrition event because of scheduling conflicts and leadership or staffing changes. A worksite program was negatively affected by financial constraints and employee layoffs. For one program, project kick-off events were well-attended, with high reach at all sites.
Hooker et al., 2005	Hooker SP, Wilson DK, Griffin SF, Ainsworth BE. Perceptions of environmental supports for physical activity in African American and white adults in a rural county in South Carolina. *Prev Chronic Dis.* 2005;2(4):A11.	1270 respondents; n=477 African American, 38.2% male, 61.8% female; 20% <high school, 37.9% high school graduate, 26.3% some college, 15.8% college graduate. N=688 White; 47.2% male, 52.8% female; 8.7% < high school, 29.7% high school graduate, 34.5% some college, 27.1% college graduate.	Questionnaire that measured safety related environmental support and social environmental support in neighborhoods. Behavioral Risk Factor Surveillance System (BRFSS) measured PA that meets the CDC guideline (30 minutes or more per day for 5 days or more per week of moderate-intensity PA or 20 minutes or more per session for 3 days or more per week of vigorous-intensity PA). Walking was assessed by asking if they walked for at least 10 minutes at a time for recreation, exercise, or transportation or while at work and how many days per week and how much time per day they walked.	Recreation facilities; streets		**X**	Both White (24%) and African American (23%) adults reported that there were no public recreation facilities in their neighborhoods. Compared with African American adults, a greater percentage of white adults had light traffic volume in their neighborhoods (46.7% White, 34.1% African American), and had neighborhoods safe from crime (74.6% white, 65.0% African American). A greater percentage of African American adults (47.6%) reported moderate traffic in their neighborhood, compared with White adults (36.3%). White adults who reported their neighborhoods as safe from crime were 1.8 times (95% CI, 1.03–3.12), more likely to report meeting the walking recommendation than white adults who reported their

						neighborhoods as not safe. In addition, white adults who perceived moderate traffic in their neighborhood were one half as likely to report meeting the walking recommendation compared with white adults who perceived heavy traffic in their neighborhood.
Houghtaling et al., 2019*	Houghtaling B, Serrano E, Dobson L, et al. Rural independent and corporate Supplemental Nutrition Assistance Program (SNAP)-authorized store owners' and managers' perceived feasibility to implement marketing-mix and choice-architecture strategies to encourage healthy consumer purchases. *Transl Behav Med.* 2019;9(5):888-898.	19 participants; 5.3% grade 8, 5.3% some high school, 31.6% high school, 26.3% some college, 26.3% associate degree, 5.3% some graduate or professional school; 73.7% White, 15.8% Black, 5.3% Pacific Islander, 5.3% Arab	Surveys were used to assess participants' demographic, store, and consumer variables. Card sorting was used to assess perceptions and/ or similarities among food stores owners and managers. An marketing-mix and choice-architecture (MMCA) framework was used to organize the card sort by strategy: place, profile, portion, pricing, promotion, priming, prompting, and proximity. The 62-item card sort exercise that was audio-recorded determined SNAP-authorized retailers' perceived feasibility to implement healthy MMCA strategies.	Food retail	**X**	Store owners and managers were more willing to improve healthy food access than remove unhealthy options. Labeling strategies were the most preferred strategy for encouraging healthy food sales. There were some differences between corporate and independent management regarding strategy feasibility (e.g., corporate less willing to make Place changes. Strategy acceptability and appropriateness were important for management regarding likelihood of using to improve healthy food sales.
Houghtaling, 2020	Houghtaling B, Serrano E, Dobson L, et al. Perceptions of rural SNAP-authorized food store owners and managers about healthy product availability. *J Nutr Educ Behav.* 2020;52(2):171-179.	Supplemental Nutrition Assistance Program–authorized retailers of convenience (n = 19), dollar (n = 4), grocery (n = 5), and specialty (n = 1) stores participated (n = 29). Most retailers identified as white (n = 14; 19 retailers	The Market Basket Assessment Tool (MBAT) to assess the availability and quality of healthy Dietary Guidelines for Americans aligned products in food stores. Free listing was used to provide data on nutrition knowledge and healthy product perception salience among SNAP-authorized retailers. Top listed items are considered more salient than products listed farther down on a free list. Free lists were collected on paper	Food retail	**X**	The most widely available products by category were 100% whole-wheat or grain bread (62%), low-sugar cereal (38%), oatmeal (38%), eggs (72%), low-fat cheese (41%), peanut butter (97%), sunflower seeds (80%), bananas (55%), tomatoes (48%), (canned) green beans (83%), and corn (76%). A number of these more widely available foods were not listed by SNAP-authorized retailers as a perceived healthy product

		responded to this survey question) and a majority were female (n = 15).	and included 2 steps: (1) SNAP-authorized retailers listed as many healthy foods and beverages as they could think of; (2) they listed only their perceptions of healthy foods and beverages currently sold in the store. The researchers prompted for missed items.			available for sale: 100% whole-wheat or grain bread, low-sugar cereal, oatmeal, low-fat cheese, peanut butter, sunflower seeds, frozen broccoli, frozen corn, ground turkey, frozen shrimp, frozen salmon, sardines, and low-sodium turkey and ham luncheon meats.
Izumi et al., 2015	Izumi BT, Findholt NE, Pickus HA. Formative evaluation to increase availability of healthy snacks and beverages in stores near schools in two rural Oregon Counties, 2013. *Prev Chronic Dis.* 2015;12:E215.	15 store owners	Interviews with store owners; question include "*When you are ordering snack foods, what do you consider? Do you try to carry a selection of healthier snacks, such as baked chips or low-fat baked goods like bagels? If you currently carry, or have tried to carry, healthier snacks in your store, what has been your experience with selling these? When you are ordering beverages, what do you consider? Do you try to carry a selection of healthier beverages, such as 100% fruit juice or skim milk? If you currently carry, or have tried to carry, healthier beverages in your store, what has been your experience with selling these? What do you consider when ordering fruits and vegetables for your store? Do you carry, or have you tried to carry, any ready-to-eat fruits or vegetables that children might choose as snacks? If yes, what has been your experience with selling these? What do you see as being the major barriers to carrying healthier snacks and beverages? What, if anything, could potentially be done to overcome these barriers?*"	Food retail	**X**	Food store owners identified customer demand, space constraints, vendor influence and perishability as the most important factors influencing stocking healthy foods. Across the 6 store owners, customer demand was the primary criterion by which they made their stocking decisions. Five of 6 store owners indicated that space constraints limited the number and variety of products they could carry in their stores. All store owners reported that their vendors carried few healthy snacks and beverages. When healthier options were available, they were generally available only in quantities too large to sell to store owners' limited customer base. When asked to identify barriers to stocking healthy snacks and beverages, 4 of 6 participants indicated that perishability of products such as fresh fruits and vegetables made it difficult to carry these items.

Jahns et al., 2014	Jahns L, McDonald LR, Wadsworth A, Morin C, Liu Y. Barriers and facilitators to being physically active on a rural U.S. Northern Plains American Indian reservation. *Int J Environ Res Public Health.* 2014;11(11):12053-12063.	11 total participants, six adults participated the barriers session and five participated in the facilitators' session, 2/3 men, 7 attended some college or technical school	Nominal grouping technique sessions, one for barriers and one for facilitators to meeting PA recommendations	Recreation facilities; streets; trails; parks		**X**	Environmental barriers to PA were the following: no access to gym, fear of dog attack, transportation, and snow in the winter months. Facilitators were the following: outdoors, walking with kids, available bike paths, casino swimming pool, recreation center that is always open, having a bike, parks, good shoes, hand weights, and working out.
Jernigan et al., 2012	Jernigan VB, Salvatore AL, Styne DM, Winkleby M. Addressing food insecurity in a Native American reservation using community-based participatory research. *Health Educ Res.* 2012;27(4):645-655.	40 participants in 5 focus groups; 31 identified as Native Americans.	Tool for Health and Resilience in Vulnerable Environments (THRIVE); equitable opportunity domain questions "*Do people of all races and ethnicities have equal opportunity in our community? Can people make a living wage in our community? Does everyone in our community benefit from quality education and training?" The people domain questions include "Do people know and trust each other? Is the community willing to take action to make things better? Do members of the community expect and reinforce respectful, safe and health-promoting behaviors and attitudes?*" The place domain questions "*Are healthy products available and affordable in our community? Do we feel proud of our community? Are there places where people can enjoy nature and be active in our community? Can we affordably and efficiently get to where we need to be? Are there places we can afford to live in our*	Food retail; recreation facilities	**X**	**X**	Community members identified racial injustice and physical and financial barriers to accessing healthy and culturally appropriate foods as areas of greatest importance. When discussing 'jobs and ownership' participants talked about the lack of Native-owned businesses in the Valley. They pointed out that the absence of Native-owned stands at the weekly farmers' market as well as its location in a mostly white area of town made Native people feel unwelcome. Cash-only sales at the farmers' market were cited as an additional barrier for Native community members in accessing food at the market. Closely related were issues regarding 'what's sold and how it's promoted'. Community members pointed out that without a job or a living wage, it was difficult paying for the gas needed to travel 2 hours to the closest supermarket. Focus group members felt that the factor

			community? Can I safely drink the water and breathe the air in my neighborhood? Is expression through art honored and supported in my community?"			'look, feel and safety' played out in their community in its absence of playgrounds, parks, sidewalks and streetlights.
Jernigan et al., 2018*	Jernigan VBB, Williams M, Wetherill M, et al. Using community-based participatory research to develop healthy retail strategies in Native American-owned convenience stores: The THRIVE study. *Prev Med Rep.* 2018;11:148-153.	75% women, 64% had a high school education plus some college or technical school	Questionnaire developed based off Gustafson et al (2011) that assessed participants' perceptions of the availability, variety, quality, and cost of fresh vegetables and fruits in their town and the extent to which cost was a barrier to purchasing these foods. Behavioral Risk Factor Surveillance System (BRFSS) assessed daily consumption of vegetables and fruits and number of servings of each.	Food retail	**X**	Overall, 57% believe it is easy to purchase fresh fruits and vegetables, 43% strongly agree there is a large selection of fresh fruits and vegetables, 35% strongly agree this produce is high quality, 56% strongly agree it is expensive, and 39% believe this has prevented them from purchasing them. 74% claim the round trip between home and where they mainly shop for groceries is > 20 miles
Jilcott Pitts et al., 2009	Jilcott SB, Laraia BA, Evenson KR, Ammerman AS. Perceptions of the community food environment and related influences on food choice among midlife women residing in rural and urban areas: A qualitative analysis. *Women Health.* 2009;49(2-3):164-180.	28 participants; 19 Black, 9 White,	Semi-structured interviews assessing facilitators and barriers to HE and PA on multiple levels of the social ecological framework, with emphasis on environmental and community-level factors. Specifically, interview questions were about community barriers and resources related to a healthy diet, women's perceptions of various community food sources were analyzed deductively. PA responses were not used for this study.	Food retail	**X**	Food sources included supermarkets, discount superstores, produce markets, two types of restaurants. Supermarkets and Discount Superstores: While having access to both, participants lived further away from these resources, which may limit food options. Produce stands: Lower cost increase likelihood of purchasing food. Non-Fast-Food Restaurants: Offer healthy food options and thus healthier than fast-food.
Jilcott Pitts et al., 2015	Jilcott Pitts SB, Wu Q, Demarest CL, et al. Farmers' market shopping and dietary behaviours among Supplemental Nutrition Assistance Program	N=197; 32 male (16.2%), 165 female (83.8%); 111 high-school graduate or less (56.1%), 87 some college or more (43.9%); 150 Black	Survey on factors in their neighborhoods that hindered them from being physically active or eating healthier. Questions include "H*ow often in the past 12 months did you buy fruits or vegetables that were locally grown from a farmers' market, community-*	Food retail	**X**	Barriers to shopping at farmers' markets included does not accept SNAP/electronic benefit transfer, out of the way and lack of transportation. Farmers' market shopping was associated with awareness of farmers' markets (estimate =0·18 (se 0·04), P<0·001).

	participants. *Public Health Nutr.* 2015;18(13):2407-2414.	(76.1%), 47 Non Black (23.9%)	*supported agriculture (CSA), roadside stand, or pick-your-own produce farm?*". For barriers: "*What is the main reason you shop at this or another farmers' market? If you never shop at farmers' markets, what is the main thing that would motivate you to shop at farmers markets?*" Block, Fruit, Vegetable, and Fiber screener that measured fruits and vegetables consumption and servings/ day.				Fruit and vegetable consumption was positively associated with farmers' market shopping (estimate =1·06 (se 0·32), P=0·001).
Jilcott Pitts et al., 2015	Jilcott Pitts SB, Keyserling TC, Johnston L, et al. Associations between neighborhood-level factors related to a healthful lifestyle and dietary intake, physical activity, and support for obesity prevention polices among rural adults. *J Community Health*. 2015; 40 (2): 276-284.	366 participants: mean age was 55 years, and mean education was approximately 13 years. Nearly three quarters were female, and 65% were African American.	Survey on perceived neighborhood barriers to a healthful lifestyle, and associations between neighborhood barriers to healthy eating and PA, participants' support for seven obesity prevention policies, and dependent variables of self-reported dietary and PA behaviors, and measured body mass index. Used participants' residential addresses and Geographic Information Systems (GIS) software to assess neighborhood-level factors related to access to healthy food and PA opportunities.	Streets; parks; recreation facilities; trails; food retail	**X**	**X**	Participants reported not enough bike lanes (35%), sidewalks (27%), not enough affordable exercise places (25%), too much crime (25%), no place to buy a quick healthy meal to go (22%), not enough parks trails or tracks for walking (18%), not enough PA programs that meet your needs (18%), unleashed dogs (18%), not enough restaurants with healthy food choices (17%), too many fast food places (15%), no street lights (15%), not enough farmers markets or produce stands (14%), speeding drivers (12%), not enough food stores with affordable fruits and vegetables (11%), heavy traffic (11%), rural environment as a barrier (10%). Farmers 'market shopping was associated with awareness of farmers 'markets (estimate=0·18(SE0·04), P<0·001). Fruit and vegetable consumption were positively associated with farmers 'market shopping (estimate=1·06 (SE0·32),

							P=0·001). Barriers to shopping at farmers 'markets included does not accept SNAP/electronic benefit transfer, out of the way and lack of transportation.
Jilcott Pitts et al., 2017	Jilcott Pitts SB, Keyserling TC, Johnston LF, et al. Examining the association between intervention-related changes in diet, physical activity, and weight as moderated by the food and physical activity environments among rural, Southern adults. *J Acad Nutr Diet.* 2017;117(10):1618-1627.	291 participants at baseline, 80% female, 68% African American. Mean age was 56.5 years.	Two Likert type surveys measuring magnitude of neighborhood nutrition-related barriers and neighborhood PA-related barriers. Density of and distance to food and PA venues, modified food environment index, Walk Score, and crime were also collected.	Food retail; recreational facilities; streets		**X** **X**	There was an inverse association between weight change and the food environment, suggesting that participants who lived in a less-healthy food environment lost more weight during the 6-month intervention period (P=0.01). Also, there was a positive association between self-reported PA and distance to private gyms (P=0.04) and an inverse association between private gym density and pedometer-measured steps (P=0.03), indicating that those who lived farther from gyms and in areas with lower density of gyms had greater increases in PA and steps, respectively.
Jilcott Pitts et al., 2018	Jilcott Pitts SB, Wu Q, McGuirt JT, Sharpe PA, Rafferty AP. Impact on dietary choices after discount supermarket opens in low-income community. *J Nutr Educ Behav.* 2018;50(7):729-735.	Greenville 2015: 108 (63.9%) female, 84 (53.2%) high school graduate or less, 146 (87.4%) Black; Greenville 2016: 56 (60.9%) female, 21 (23.6%) high school graduate or less, 60 (68.2%) Black; Kinston 2015: 105 (61.1%) female, 60 (35.3%) high school graduate or less, 121 (72%) Black; Kinston 2016: 47 (52.2%) female, 45	Perceived healthful food access was assessed using 3 validated items, including: "*It is easy to purchase fresh fruits and vegetables in my neighborhood, There is a large selection of fresh fruits and vegetables available in my neighborhood, and The fresh produce in my neighborhood is of high quality.*" Response options ranged from strongly disagree to strongly agree. Purchases using customer bag-checks with questions "*Have you ever shopped at a new [chain store name] store? Have you shopped at a new supermarket*	Food retail		**X**	No significant differences in the consumption of fruits, vegetables, sweetened beverages, and soda in Greenville and Kinston between 2015 and 2016. 59% of Greenville participants shopped at a new chain store; whereas, 32% of Kinston participants shopped at a new supermarket in the past 12 months. Distance to food stores and the consumption of fruits and vegetables was the only significant association, as the more distance for travelling to a grocery store, the lower amounts of fruits and vegetables consumed.

		(50.6%) high school graduate or less, 61 (71.0%) Black.	*in the past 12 months, one you have never shopped at before?"*. Diet assessed using the National Cancer Institute Fruit and Vegetable Screener. Google Distance Matrix application programming interface to measure distance from participants addresses to food stores.			
Jilcott Pitts et al., 2018	Jilcott Pitts SB, Wu Q, Truesdale KP, et al. One-year follow-up examination of the impact of the North Carolina Healthy Food Small Retailer Program on healthy food availability, purchases, and consumption. *Int J Environ Res Public Health.* 2018;15(12).	Customers were ages 42.5-44.9 years, had mean BMI of 27.7–30.5 kg/m^2, 40.2-44.2% female, and 39.5-87.2% black across the data collection points.	Healthy food availability using a validated audit tool, using in store audit Environment Measures Survey for Stores (NEMS-S) that measures the availability, price, quality, and variety of 10 categories of foods and beverages; Customer Intercept Survey consisted of questions frequency of shopping, the availability of fresh fruits and vegetables in the neighborhood, diet assessment using the National Cancer Institute Fruit and Vegetable Screener, Healthy Eating Index from customer "bag checks" to report the healthfulness of fruits and vegetables purchased; validated Veggie Meter device to assess skin carotenoid.	Food retail	**X**	In evaluating the Healthy Food Small Retailer Program (HFSRP) intervention outcomes within rural communities, intervention stores (n= 5) and control stores (n= 11), there were statistically significant improvements in healthy food supply scores (availability), with the Healthy Food Supply HFS score being−0.44 points lower in control stores and 3.13 points higher in HFSRP stores pre/post HFSRP (p= 0.04). No statistically significant changes in purchases or self-reported consumption or skin carotenoids among customers in Healthy Food Small Retailer Program (HFSRP) versus control stores. No significant differences in fruit and vegetable intake, sugary beverage intake, or in skin carotenoids and BMI among customers from HFSRP versus control stores
Johnson et al., 2017	Johnson KR, McKinley K, Hossfeld L, et al. "God always provides": Challenges and barriers in food	25 interview food pantries providers/ volunteers. 14 food pantries and 9 were faith-based organizations.	Interviews, including questions about history of the pantry, such as "*How did your pantry get started? How long has your pantry served the community? How often does your pantry provide services to the*	Food assistance programs	**X**	A key finding identified in this research is the evidence of challenges with infrastructure that create barriers that prohibit optimal services for clients. For some food pantry providers, problems were

	assistance delivery in Mississippi. *Community Development.* 2017;49(1):2-17.		*community? How many staff members do you have? How many volunteers do you have?*" Documenting need in the county: "*Tell us about the need in your county. Who has access to your pantry? Tell us what a good day looks like at your pantry. Tell us what a bad day looks like at your pantry."* Record keeping: "*Tell us how you keep track of your service delivery. Do you use technology in the day-to-day operation of the pantry?"* Long-term planning or future of the pantry: "*Over the long term, tell us how you see your pantry operating in 5 years? Will you be involved with the pantry in any capacity? How do you foresee this work continuing if you are no longer involved with the pantry?*"			resolved by adapting the physical space to accommodate products and/or processes associated with food distribution. One organization was gifted a space where they converted an old gymnasium into the food pantry. Although this building seemed fit to be a food pantry, the building is not wired for broadband access and there is no telephone service in the facility. The pantry had other problems that hinder the ability for it to function. The food pantry providers and volunteers identified both technological issues and logistical issues as barriers to service delivery. Technological issues pertain to the challenges associated with acquiring equipment to facilitate record keeping, internet access, and protocols for reporting monthly inventory. Logistical issues are defined as situations that affect the operation of the food pantry. Facilitator: Cooperation among food pantries may lead to serving more clients and ultimately build infrastructure and foster sustainability of food pantry operations.
Kasehagen et al., 2012	Kasehagen L, Busacker A, Kane D, Rohan A. Associations between neighborhood characteristics and physical activity among youth within	N = 45,392. Weight percentages of sample characteristics: 55.9% male, 42.8% female; 43.5% no parent has more than a high school education, 52.6%	National Survey of Children's Health (NSCH) to measure the intensity and number of days/ week youth participated in PA. Parental report of the youth's neighborhood characteristics reported via survey: dichotomized three neighborhood amenities that	Parks; recreation facilities; streets	**X**	Adjusted odds ratios of neighborhood characteristics associated with minimum PA, among youth aged 10–17 years, by rurality are presented. Presence of sidewalks in the neighborhood: Large rural core 0.96 (0.63, 1.46), Other large rural 0.97

	rural-urban commuting areas in the US. *Matern Child Health J.* 2012;16 Suppl 2:258-267.	At least one parent has more than a high school education; 38.2% Hispanic, 52.9% White- non-Hispanic, 49.8% African American, non-Hispanic, 57.8% Multi-racial, non-Hispanic, 45.8% Other, non-Hispanic	identified characteristics of the local built environment (sidewalks, parks, and recreation centers) as present or absent. Three neighborhood detracting elements (litter, dilapidated housing, and vandalism) were combined together into one variable that indicated whether the child was reported to have any of these detracting elements in his/her neighborhood.				(0.59, 1.58) Small rural core 1.18 (0.70, 1.99) Other small rural 0.56 (0.27, 1.18) Isolated rural 1.12 (0.81, 1.54). Presence of neighborhood parks: Large rural core 0.97 (0.61, 1.52), Other large rural 1.28 (0.79, 2.07) Small rural core 1.00 (0.57, 1.78) Other small rural 3.49 (1.55, 7.84) Isolated rural 1.11 (0.61, 1.59). Presence of neighborhood recreation centers: Large rural core 0.96 (0.65, 1.40), Other large rural 0.82 (0.52, 1.30) Small rural core 0.98 (0.67, 1.42) Other small rural 0.78 (0.40, 1.51) Isolated rural 0.85 (0.61, 1.19)
Kegler et al., 2008	Kegler MC, Escoffery C, Alcantara I, Ballard D, Glanz K. A qualitative examination of home and neighborhood environments for obesity prevention in rural adults. *Int J Behav Nutr Phys Act.* 2008;5:65.	58 participants; 30 African American (15 males and 15 females); 22 (73.4%) less than high school, 3 (10%) high school graduate, 1 (3.3%) some college/vo-tech, 1 (3.3%) college graduate, 3 (10%) graduate degree; 28 White (15 males, 13 females), 3 (7%) less than high school, 4 (4.3%) high school graduate, 11 (39.3%) some college/ vo-tech, 6 (21.5%) college graduate, 4 (14.3%) college graduate	The interview guide was developed collaboratively with Community Advisory Board members on home environment, HE, and PA. Questions include "*What, if anything, about your neighborhood or nearby community makes it easy to be physically active. What, if anything, about your neighborhood or nearby community makes it hard to be physically active. Would you say it is easy or hard to get healthy foods for your family or household? What are some reasons for that? How often do you have fresh fruits and vegetables available in your home? Does your family or household have a vegetable garden? How often do you eat fresh or canned foods from your garden?*	Local food producers; food retail; recreation facilities; streets; trails	**X**	**X**	Facilitators to being physically active: plenty of space for walking and riding bikes, particularly up and down the road outside their homes; minimal traffic; and living in a safe and friendly neighborhood. When asked specifically about the presence of sidewalks and streetlights, participants generally commented on whether they existed or not, but typically did not elaborate on whether sidewalks and lighting facilitated PA. When asked directly about the availability of recreation facilities, tracks and walking trails were mentioned most often. Barriers to being physically active: Lack of access to exercises or recreational facilities, no walking trails, lack of sidewalks and streetlights, loose dogs, speeding traffic,

			Has anyone in your family or household ever talked to you about your weight? Who brought it up? What did they say? Did it make you want to try to lose weight? How did you react? *How often, if at all, do you and your family or household members participate in physical activities together? What do you do? What do you think are some reasons for that [not being active together]? Have you or anyone else tried to encourage your family or household to be more physically active together? What happened with that? Who brought it up? Did it work? How did people react? What could your family or household do to encourage you to be more physically active?*"			crime, or safety concerns. Facilitators to HE: Easy access to healthy foods at grocery stores and healthy foods are affordable and rural areas has a lot of farming and places to get fresh vegetables. Barriers to HE: Cost of healthy foods, poor selection in local stores, price of gas to go to larger areas with better selections.
Kegler et al., 2012	Kegler MC, Swan DW, Alcantara I, Wrensford L, Glanz K. Environmental influences on physical activity in rural adults: The relative contributions of home, church and work settings. *J Phys Act Health.* 2012;9(7):996-1003.	111 (41.4%) male, 157 (58.6%) females. 22 (8.2%) less than high school, 72 (27%) high school/ GED; 87 (32.6%) some college, 86 (32.2%) college graduate; 140 (52.2%) White, 128 (47.8%) African American.	Social environment items were measured by asking questions related to social support at home, church and work "*During the past 6 months, how often did your family or anyone living in your household do or say the following: offered to exercise with you, reminded you to exercise, encouraged you to stick to your exercise program, complained about the time you spend exercising, planned for exercise on recreation outings, helped plan activities around your exercise, or talked about how much they like to exercise?*" and "*During the past 6 months, how often did [anyone from your church/your coworkers] do or say the*	Churches; workplace; home environment	**X**	Participants who reported high levels of both accesses reported the highest levels of PA. For moderate PA, there was also an interaction between race and the physical environment at church. Overall, physical environments defined as, sports leagues, exercise facilities, and exercise programs at church, were associated with PA. Church-based social support for PA was associated with walking and total metabolic equivalent (METs). Having more exercise equipment in the home and also having more programs and facilities at church is not associated with increased PA

			following: offered to exercise with you (church only), gave you encouragement to stick to your exercise program, discussed exercise with you?" Participants were also asked to list any sport equipment used for PA at home such as, "stationary aerobic equipment, weight lifting equipment." Physical Environment included questions that asked "*if their church offered or had exercise programs, sports leagues, and exercise facilities*" The International PA Questionnaire-Short form IPAQ measured the frequency and duration of PA.			among those who are already active.
Kegler et al., 2013	Kegler MC, Alcantara I, Dubruiel N, Veluswamy JK, Appelbaum H, Handwerk S. "Positive deviants": A qualitative study of physically active adults in rural environments. *J Prim Prev.* 2013;34(1-2):5-15.	N=29; 19 men, 10 women; 6.9 % had less than a high school education, 48.3 % have a high school, 44.8 % college education; 22 White, 7 African American,	Semi-structured interview questions included "*During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening or walking for exercise?" "Which of the following best describes the neighborhood where you live? By neighborhood we mean the area all around your home that you could walk to in 10–15 min.*" Responses include *"in the country or rural area with neighbors close by, a house in the country with very few neighbors close by, or in town."* To assess PA level, the following questions were asked "*How many times a week do you usually do 20 min or more of vigorous-intensity PA that makes you sweat or puff and pant? (e.g., heavy lifting, digging, jogging, aerobics, or*	Streets; home environment	**X**	Results for individuals that met PA recommendations-Types of PA: Walking during leisure time was the most common, followed by yard work. Locations of PA: Most common location was at home, including yards, followed by the neighborhood with roads being the primary neighborhood resource for exercise. Managing health problems was the top motivator for engaging in PA.

			fast bicycling)" and "*How many times a week do you usually do 30 min or more of moderate intensity PA or walking that increases your heart rate or makes you breathe harder than normal? (e.g., carrying light loads, bicycling at a regular pace, or doubles tennis)*."				
Kegler et al., 2014	Kegler MC, Swan DW, Alcantara I, Feldman L, Glanz K. The influence of rural home and neighborhood environments on healthy eating, physical activity, and weight. *Prev Sci.* 2014;15(1):1-11.	513 participants; 234 (45.6%) male, 279 (54.4%) female; 62 (12.1%) < high school, 151 (29.4%) high school/ GED, 162 (31.6%) some college, 138 (26.9%) bachelor or higher; 261 (50.9%) Caucasian, 252 (49.1%) African American.	A two-item screener and the 2005 Behavioral Risk Factor Surveillance System (BRFSS) to measure fruits and vegetables intake. National Cancer Institute fat screener developed by Thompson et al. assessed fat intake. The International PA Questionnaire (IPAQ) measured PA. The access to healthy foods in the neighborhood measures ease of purchase and variety of fruits and vegetables and low-fat products in the neighborhood. To measure walkable neighborhoods, questions about safety, presence of sidewalks and destinations, and PA opportunities. The measure of the availability of healthy/unhealthy foods in the home environment was based on the household food inventory of Patterson et al. Self-efficacy for both diet and PA were measured using items adapted from Sallis et al.	Recreational facilities; homes environment; streets; food retail		**X**	**X**	PA had a direct effect on BMI; self-efficacy, family support for PA, and household inventory of PA equipment also had direct effects on PA. Neighborhood walkability had an indirect effect on PA through self-efficacy and family social support. Although neither fruit and vegetable intake nor fat intake had direct effects on BMI, self-efficacy and household food inventories had direct effects on dietary behavior. Perceived access to healthy foods in the neighborhood had an indirect effect on healthy eating and a direct effect on weight; neighborhood cohesion had an indirect effect on healthy eating through self-efficacy.
Kegler et al., 2015	Kegler MC, Alcantara I, Haardorfer R, Gemma A, Ballard D, Gazmararian J. Rural neighborhood walkability:	N=29; 19 (65.5%) men, 10 (34.5%) women, 2 (6.9%) < high school, 14 (48.3%) high school/some college, 13	Semi-structured Interviews: questions include "*Would you consider the area around your home as a neighborhood? If yes, what kinds of things make it a neighborhood? If no, why is it not a neighborhood? A*	Streets			**X**	Although more than half of the participants described traffic in their neighborhood as generally light or slow, about one-third of participants noted that they believed traffic on the roads and streets negatively

	Implications for assessment. *J Phys Act Health.* 2015;12 Suppl 1:S40-45.	(44.8%) college degree; 22 (75.9%) White, 7 (24.1%) African American	question about walkability domains in neighborhoods (safety, traffic and sidewalks) "*whether that feature was present or absent, and then to talk about whether it affected their decision to exercise in their neighborhood."*				affected their decision to walk. Participants did not think that the absence of sidewalks made a difference in whether they walked in their neighborhood. Mentioned unsafe features: traffic, loose dogs and snakes
Ko, 2018	Ko LK, Enzler C, Perry CK, et al. Food availability and food access in rural agricultural communities: Use of mixed methods. *BMC Public Health.* 2018;18(1):634.	32 participants, 1 (3%) male and 31 (97%) females; 18 (62%) less than high school, 6 (21%) high school diploma or GED, 5 (17%) some college or Bachelors' degree	Semi-structured interviews to assess perceptions of the food environment. Nutrition Environment Measures Survey for Restaurants (NEMS-R) was used to assess restaurants and the Nutrition Environment Measures Survey for Stores (NEMS-S) was used to assess grocery and convenience stores.	Food retail	**X**		This study found that the overall food environment quality composite scores for both food stores (grocery stores and convenience stores) and restaurants were very low, indicating the limited availability of healthier options in the food environment. Participants perceived high availability and accessibility of quality fresh produce. Most participants reported eating out regularly several times a week, frequenting restaurant chains that serve buffets or fast foods, and allowing children to make decisions regarding their own food choices.
Kristjansson et al., 2015	Kristjansson AL, Elliott E, Bulger S, Jones E, Taliaferro AR, Neal W. Needs assessment of school and community physical activity opportunities in rural West Virginia: the McDowell CHOICES planning effort. *BMC Public Health.* 2015;15:327.	Student PA and health-related behavior survey with 5th and 8th grades; 3 focus groups with adults community members n = 22, Females = 17; 3 focus groups with 2 representatives from each of the 11 schools (n = 22, Females = 15.	PA interest survey for rating physical activities of interest, student PA. Health behavior survey with questions related to PA and sedentary lifestyle, selected nutrition measures and questions concerning attitudes and ideas about PA. Focus groups used the SWOT (strengths, weaknesses, opportunities, and threats) analysis framework, two town hall meetings to introduce the program, body mass index measurements	Recreation facilities		**X**	Focus groups agreed sedentary lifestyle was a widespread problem in the county, cited lack of access to PA resources/long distance, lack of PA opportunities. 52.9% of students screened were overweight or obese through the CARDIAC program screening compared to 38.5% statewide. 92% have access to internet, almost all in town halls state they would participate in more PA if there was a PA recreational facility close to them
Kumar et al., 2016	Kumar J, Adhikari K, Li Y, Lindshield	9 focus groups with 6th-8th graders;	Focus group with semi-structured open-ended	Schools	**X**	**X**	School vending machines were the only Policy System

	E, Muturi N, Kidd T. Identifying barriers, perceptions and motivations related to healthy eating and PA among 6th to 8th grade, rural, limited-resource adolescents. *Health Educ.* 2016;116(2):123-137.	3 focus groups with parents and teachers.	questions, including "*Describe to me the things that you usually like to eat? Describe to me the things that you do not like to eat? What are some of your favorite restaurants to eat at? What kind of foods are generally eaten at your mealtimes in your home? Tell us about school lunch? How does your school work? Where do you get most of your nutrition information? What comes to mind when you think of HE? Give me examples of healthy foods that you eat? What are some reasons why you like eating these foods? What comes to mind when you think of unhealthy eating? Give me some examples of unhealthy foods that you eat? What are some reasons why you eat these foods? What comes to mind when you hear the word "physically active? What makes it hard or easy to be physically active? What keeps you from being physically active sometimes? What kind of physical activities do you like? Why?*"			environmental influence mentioned, students expressed frustration with school lunches and often ate from vending machines, which were identified as a barrier to HE. Students expressed extreme dissatisfaction with the school systems provided lunches, which was linked to the vending machine barrier to HE. Hunger and being tired as a result of skipping lunch at school also prevent students of being physically active. Facilitators that motivated adolescents to be physically active included good weather, playing enjoyable sports, socializing with friends, and being in a good mood.
Li et al., 2015	Li C, Chi G, Jackson R. Perceptions and barriers to walking in the rural South of the United States: The influence of neighborhood-built environment on pedestrian behaviors. *Urban Des Int.*	72 respondents in traditional neighborhoods: 45.83% males, 30.56% less than bachelor's degree, 34.72% bachelor's degree, 34.72% Master's or professional degree. 190 respondents in early conventional	Modified International PA Questionnaire (IPAQ), that consisted of two parts. The first part included questions about self-reported walking behaviors how many days they spent walking for leisure and for utilitarian purpose in the previous 7 days. The second part asked about residents' perceptions of neighborhood characteristics.	Streets	**X**	Perceived traditional neighborhoods to have better access to stores, open space, public infrastructure, and overall aesthetics, however suburban neighborhoods had better perceived safety. Perceived social environment barriers was associated with lower walking and activities in neighborhoods. Sidewalks was mentioned as an important facilitator of walking and

	2015;20(4):255-273.	suburban neighborhoods: 43.16% males, 10.70% less than bachelor's degree, 35.83% Bachelor's degree, 53.48% masters or professional degree. 72 respondents in late conventional suburban neighborhoods: 35.21% males, 21.43% less than bachelor's degree, 34.29% bachelor's degree, 44.29% master's or professional degree.				perceived traffic safety in neighborhoods. Respondents in the traditional neighborhoods provided ratings indicative of higher accessibility and esthetics compared with the other two conventional suburban neighborhood types. The residents of late conventional neighborhoods reported significant accessibility barriers to walking. Perceived barriers for neighborhood walking also differed significantly by neighborhood type. Traditional neighborhoods scored traffic safety and social environment as more significant walking barriers on average, while respondents in the early conventional suburban neighborhoods rated accessibility and esthetics as more important walking barriers.
Li et al., 2018	Li C, Chi G, Jackson R. Neighbourhood built environment and walking behaviours: evidence from the rural American South. *Indoor Built Environ.* 2018;27(7):938-952.	289 total participants; 42% males/ 57.96% females; 83% hold a bachelor's degree or higher; 89.52% self-claimed as White	Modified International PA Questionnaire that included 3 parts, including self-reported PA questions on how many days they had walked in the past seven days for leisure and transportations purposes. The perception of neighborhood characteristics included rating statements about neighborhoods such as, '*my neighbourhood has low amounts of vehicle traffic*', perceived environmental barriers were also assessed by rating 19 statements such as '*I feel uncomfortable walking in my*	Streets	**X**	High perceived aesthetics were positively associated with walking, along with higher perceived accessibility. Accessibility (mean 2.69; SE 0.97), Traffic safety (mean 2.37; SE 0.82), Aesthetics (mean 2.15; SE 0.64). Traffic safety and unsupportive social environment were two major barriers to walking in traditional neighborhoods.

			neighbourhood because it has high amounts of vehicle traffic'				
Lin & Fly, 2016	Lin YC, Fly AD. USDA Fresh Fruit and Vegetable Program is more effective in town and rural schools than those in more populated communities. *J Sch Health.* 2016;86(11):769-777.	Total students in Rural/ town areas 1045; Boys n=529 (50.6%) Girls n= 516 (49.4%); 4th graders n= 388 (37.1%), fifth graders n= 421 (40.3%), 6th graders n= 236 (22.6%); n=10 (1%) Asian or Asian Americans, n=74 (7.1%) African Americans, n=757 (72.4%) White, n=33 (3.2%) Native Americans, n=171 (16.3%) Others, n= 932 (89.2%) non-Hispanic, n=113 (10.8%) Hispanic	Indiana Fresh Fruit and Vegetable Program Survey that consisted of 58 items. Frequency of consuming fruits and vegetables measured by the Food Behavior Checklist Modified for Children by responding to the items "*I eat more than one kind of fruit every day"* and "I *eat more than one kind of vegetable every day*." The School PA and Nutrition survey, questions include "*Yesterday, how many times did you drink 100% juice? Do not count fruit drinks like Kool-Aid, High-C, lemonade, or Sunny D*" The Network for Healthy California survey to measure availability of fruits and vegetables at home by responding to the statements "*Most of the time there is fruit at home*" and "*Most of the time there are vegetables at home*".	Schools; home environment	**X**		Effects of the Indiana Fresh Fruits and Vegetable Program: Town and rural students were 1.2 times more likely to eat different kinds of fruit (p=.04) and vegetables (p=.01) daily, and increased fruit (+1.0 time/day; p<.01) and vegetable intake frequency (+0.5 times/day; p=.03). Students reported more availability at home of fruits (80.2% vs 74.4%; p<.01) and vegetables (68.9% vs. 65.2%; p=.03) when living in the city or suburbs compared to students who lived in towns and rural areas.
Lo et al., 2017	Lo BK, Morgan EH, Folta SC, et al. Environmental influences on physical activity among rural adults in Montana, United States: Views from built environment audits, resident focus groups, and key informant interviews. *Int J Environ Res Public Health.* 2017;14(10).	Median Household income below $50,000; all were non-Hispanic White;	Resident focus groups and key informant interviews; focus group questions on community understanding, "*Tell me about programs and physical and social aspects of your community that promote PA*", on attitudes and perceptions "*Would you consider your community healthy? Tell me about that. Tell me about the types of PA that you do. Describe the intensity of the type of exercise that you do. What makes you choose the type of exercise that you do?*", on barriers *"Tell me about things that make PA more*	Natural environments ; recreation facilities; streets;		**X**	Natural geography often came up in focus group discussion like open space, diverse terrain, and water features, but extreme weather was included as a significant barrier. Barriers listed were extreme weather, poor walkability, limited facilities close, lack of age-appropriate activities, lack of promotion of activities, lack of funding, competing priorities and schedules, and lack of political priority. Facilitators included were the natural assets of Montana and some active living features

			difficult. What would prevent you from getting more exercise?", on facilitators *"Tell me about the things that would help make exercising become habit. What would help you to get more exercise?".* Interview guide on community understanding "*What do you see as the biggest overall problems or issues facing your community currently?*", on attitude & perceptions "*Would you consider your community healthy? Tell me about that. What do you like most about your community? What are your least favorite aspects of your community?*", on barriers "*Tell me about policies, physical or social aspects in this community that make PA more difficult.*", on facilitators "*Tell me about programs, policies, physical and social aspects in this community that promote PA*.", on programming "*In your opinion, what could be done to improve the environment that would make it easier for people to be active? What types of opportunities or programs to improve their health might people in this community be interested in?*"			
Mackenzie et al., 2019	MacKenzie OW, George CV, Perez-Escamilla R, et al. Healthy Stores Initiative associated with produce purchasing on Navajo Nation. *Curr Dev Nutr.* 2019;3(12):125.	692 individuals; 158 (22.9%) male, 532 (77.1%) females; 175 (25.6%) < high school, 365 (53.4%) high school graduate, 143 (20.9%) ≥ college degree	Consumer intercept survey that included the (2013) Fruit and Vegetable Index (FVI) to measure stocked fruits and vegetables in stores; survey asked about where customers did the majority of their food shopping, shopping frequency at the current store, and knowledge of whether the	Food retail	**X**	Store participation in the Healthy Navajo Stores Initiative was significantly associated with customers' purchase of produce. Customers experienced 150% higher odds of purchasing produce if they shopped in participating stores, compared with nonparticipating stores.

			current store sold fresh fruits and vegetables. Customers were first asked if they had bought any fresh or frozen fruits or vegetables that day at the store. Customers were presented with a list of fresh and frozen produce items, including photos, from which to choose. Customers were then asked if they had bought any fresh or frozen fruits or vegetables within the past week at the store.			Store type was strongly associated with customers' purchase of fruits or vegetables. Customers shopping at a grocery store had 520% higher odds of purchasing produce than did customers shopping at convenience stores. Customers shopping at trading posts had 120% higher odds of purchasing fruits or vegetables than did customers shopping at convenience stores.
Majee et al., 2016	Majee W, Jefferson UT, Goodman LR, Olsberg JE. Four years later: Rural mothers' and employers' perspectives on breastfeeding barriers following the passage of the Affordable Care Act. *J Health Care Poor Underserved.* 2016;27(3):1110-1125.	17 interviewees; 6 had some college education, 11 completed high school; 3 Hispanic white, 14 non-Hispanic white Americans.	Semi-structured focus group questions about workplace supports for Breast Feeding and Breast-Feeding experiences; questions include "*Tell me about yourself, what is your position, how long you have worked for this organization, and how long have you been in this community? As a business owner or manager how important is it to you that your employees be able to breastfeed their child and why? In your experience, what are the options mothers have for feeding the newborn babies here at (name of organization)? What are the advantages and disadvantages of each of these options? How do you inform mothers or would be mothers of these options? Do you feel your role allows you to advocate for BF within your organization? In your experience, what are the main challenges that employers deal with when helping a BF mother? What interventions or programs do you provide for BF mothers?*	Workplace	**X**	Ability to breastfeed during working hours, at work, was clearly important for BF success. Barriers include superiors' tolerance (e.g., manager ridicule); was also a facilitator for women who experienced supportive managers. Mothers described unsupportive accommodations at times (e.g., supervisors office, bathroom) that was preventative. Employers were not proactive in ensuring supportive BF language or practices and saw this as the responsibility of the breast feeding mother. Mothers were less willing to engage with employers on these issues.

			What impact do you think these interventions have on BF? What would be your main obstacles in supporting a BF mother? You have described your professional challenges in helping new Mom's breastfeed, what do you see as the main challenges BF mothers face in this organization, and in the community? How can you be helped most as an employer of mothers to promote BF to a current or potential mother? Do you feel that you are equipped to identify when a Mom is having a problem with BF? Would you like more training about addressing BF challenges? Are you aware of resources to recommend to Mom's that need help? Do you have any other comments or thoughts you would want to share with me?"			
Mann et al., 2017*	Mann G, Kraak V, Serrano E. Smart snacks in school standards in Appalachian Virginia middle schools. *Health Behav Policy Rev.* 2017;4(3):245-255.	8 public middle schools; 3 schools (pre-k – 8th grade), 4 schools (6-8th grade), 1 school (5-8th grade) > 93% of students were white	Beverage and Snack Questionnaire 2 (BSQ2) modification of the BSQ, with the addition of flavored milk, water, and coffee or tea, designed for children aged 10–18 years. Questions include: "*How has the school environment changed since implementing the Smart Snacks standards? What are some barriers you have faced with the standards? How have students felt about the changes? Have you noticed any positive impacts from the new standards? Have you noticed increased plate waste?*"	Food retail; schools	**X**	Managers reported using successful strategies to implement the standards such as purchasing novel packaging to increase sales. Although some managers were successful in finding smart snacks (popped popcorns or salty snacks), others indicated the difficulty of finding snacks corresponding to the Smart Snacks criteria. There were positive changes in cooking foods offered in cafeteria such as, baking or steaming.

Martínez-Donate et al., 2015*	Martinez-Donate AP, Riggall AJ, Meinen AM, et al. Evaluation of a pilot healthy eating intervention in restaurants and food stores of a rural community: A randomized community trial. *BMC Public Health.* 2015; 15:136.	5 (33%) owners and 4 (44%) managers. 5 (56%) were male, 4 (44%) females; 44% had completed at least some college studies. For restaurants customers, 168 in the pre intervention community, 60.8% females, 44.6% completed college degree; 151 post intervention community, 64.2% female, 39.1% completed college degree; 215 in the pre comparison community, 61% females, 46% completed college degree, 187 post comparison community, 67.2% females, 53% completed college degree. For stores customers, 96 in the pre intervention community, 75.8% females, 29.5% completed college, 203 in the post intervention community, 73.9% females, 41% completed college; 99 in the pre comparison community, 72.2% females, 34%	Interviewer-administered pre- and post-test intercept surveys with customers for evaluation procedures and measures. Customers were asked about satisfaction with healthy options available, perceived healthiness of the food purchased, and whether they purchased any food promoted as healthy in the outlet. Post test questions were about Waupaca Eating Smart (WES) name and logo recognition, exposure to WES activities/ materials/ messages, and among those exposed, degree of appeal, ease of interpretation, healthfulness to decide purchase, and whether the respondent ordered/ purchased any WES food. Post-intervention interviewer-administered surveys for managers to evaluate the implementation and maintenance of the program. Direct observations to WES implementation at 5 and 10 months after launching.	Food retail		**X**	In stores, satisfaction with the availability and promotion of fruit/vegetable and low-calorie choices improved slightly in the intervention community and worsened in the comparison community, but after adjusting for covariates these differences were not statistically significant. On a 0-4 scale (0=not likely, 4=very likely), the average likelihood of continuing at the end of the 10-month evaluation period was 2.86 (SD=0.90) for restaurant managers and 3.5 for store managers (SD=0.71). The average level of satisfaction was 3.14 for restaurant managers (SD=0.69) and 3 (SD=0.0) for store managers, on a 0 to 4 scale (0=not at all, 4=a great deal). At post-test 51.0% of exiting restaurant customers (N=151) reported they had heard of WES, 60.9% recognized the logo, and 36.9% had noticed the logo in the restaurant they just exited. On a 0-4 scale (0: not at all, 4: a great deal), restaurant customers who noticed program materials reported that, on average, ease of understanding materials was 3.1 (SD=0.9), level of appeal was 2.1 (SD=1.3), and helpfulness in deciding what to order was 0.9 (SD=1.3). Post-test customer survey results show 12.1% of patrons surveyed in participating restaurants reported having ordered a WES approved meal. These customers represented

		completed college; 203 in the post comparison community, 68.7% females, 40.7% completed college.				48.8% of customers who noticed WES signage in a participating restaurant. In stores, 50.5% of customers (N=201) had heard of the intervention community at post-test, 59.1% recognized the logo, and 50% had noticed the logo in the store they just visited. Of store customers who noticed WES in the store, 37.8% reported seeing deli samples of WES side dishes. On average, store customers who noticed WES materials reported that ease of understanding WES materials was 3.0 (SD=0.9), level of appeal was 2.3 (SD=1.1), and helpfulness in deciding what to order was 1.2 (SD=1.2) on a 0-4 scale (0: not at all, 4: a great deal). About 15.5% of surveyed customers reported purchasing foods promoted by program signs or materials.
McGuirt et al., 2014	McGuirt JT, Jilcott Pitts SB, Ward R, Crawford TW, Keyserling TC, Ammerman AS. Examining the influence of price and accessibility on willingness to shop at farmers' markets among low-income eastern North Carolina women. *J Nutr Educ Behav.* 2014;46(1):26-33.	37 women enrolled in InShape study: 59% African American, 41% Caucasian	Qualitative in-depth interviews were about food purchasing, activity space to capture geographic patterns of their normal food shopping patterns, and their use of food venues such as supermarkets, restaurants, and farmers' markets. Visual price and accessibility scenario to assess price differences between farmer's markets and supermarkets as an indicator to accessibility.	Food retail	**X**	Participants were increasingly willing to shop at the farmers' market when price savings increased and when the market was incrementally closer to their residence. Willingness was highest when there was at least a 20% price savings. Participants seemed to be influenced more by a visual representation of a greater quantity of produce received with the price savings rather than a quantitative representation of the money saved by the reduced price.
McGuirt et al., 2014	McGuirt JT, Ward R, Elliott NM,	62 Women, 37 in Eastern North	In-depth interviews, topics included neighborhood	Food assistance	**X**	Cross-cutting themes from both Eastern North Carolina

	Bullock SL, Jilcott Pitts SB. Factors influencing local food procurement among women of reproductive age in rural eastern and western North Carolina, USA. *J Agric Food Syst Community Dev.* 2014;4(4):143-154.	Carolina, 59% Black, 41% White. 23 in Western North Carolina sample 100% White.	definitions, travel behaviors, and, of interest for this study, frequency of shopping, venues accessed most frequently, reasons for selecting those venues, direct-marketing venues and local food sources, and procurement strategies.	programs; Local food producers			(ENC) and Western North Carolina (WNC) participants included access to local food sources; acceptance of Supplemental Nutrition Assistance Program/Electronic Benefit Transfer (SNAP/EBT); freshness of produce; support for local agriculture; and the community aspect of local food sourcing. In the ENC sample, half of the women currently shopped at a farmers' market or a produce stand. Most of the women did not have a garden, but some received produce from friends and family. In the WNC sample, most of the women shopped at farmers' markets or produce stands, had a garden or access to one, and received homegrown produce from friends and family. Women in both ENC and WNC reported that economic (financial) and geographic access to farmers' markets were influential in their decisions to procure food from local food sources.
McGuirt et al., 2015	McGuirt JT, Pitts SBJ, Ammerman A, et al. A mixed methods comparison of urban and rural retail corner stores. *AIMS Public Health.* 2015;2(3):554-582.	Qualitative windshield tours were completed by research staff	Windshield tours completed to gain an understanding of food environment context and community conditions. Research team member drove to previously identified corner stores, writing detailed qualitative observations and descriptions of community characteristics and context on a field document. The environmental features that were recorded included the presence of sidewalks, the proximity of corner stores to	Food retail		**X**	Los Angeles County corner stores were often located within neighborhoods and near schools, with school children frequently seen shopping at the stores. Lenoir County stores were more isolated, less accessible, but had larger stores and parking lots, and more free space surrounding the store compared to the Los Angeles urban stores. Graffiti and disrepair affecting the appearance of stores was more common in the urban areas

			schools, neighborhood areas, graffiti and disrepair, level of isolation, parking lot size, proximity to other food stores, and corner store appearance. Store audits using the Nutrition Environment Measures-Stores-Revised (NEMS-S-Rev) to measure the availability, pricing, and quality of foods at food stores. GIS analyses that examines the spatial distribution of food stores.				compared to the rural areas, including spray paint "tagging" and barred windows for security. In both rural and urban locations, junk food and junk food advertisements were prominently displayed at store entrances.
Misyak et al., 2015	Misyak SA, Johnson ML, McFerren MM, et al. Low-income mothers' perceptions of barriers to using farmers markets: A SNAP-Ed Initiative to understand access points to local foods. *J Ext.* 2015;53(4).	No details about participants.	Interviews and photography (PhotoVoice method), including 3 meetings. The first one included photographs that represented what they liked, what they did not like, what they would change, and what they would keep the same. The second meeting included lessons on Eating Smart, Moving More in farmers markets. Group discussions about the shopping experience feedbacks, themes on barriers and access to farmers markets in the third meeting.	Food retail		**X**	The main barriers identified in using farmers markets as an access point for fresh and healthy local foods were inconvenience, awareness, and social stigma.
Moore et al., 2010	Moore JB, Jilcott SB, Shores KA, Evenson KR, Brownson RC, Novick LF. A qualitative examination of perceived barriers and facilitators of physical activity for urban and rural youth. *Health Educ Res.* 2010;25(2):355-367.	41 parents; 10% male, 19.6% had less than a ninth grade, 9.8% had some high school, 9.8% had a high school diploma or equivalent, 11.8% had some college, 15.7% had an associate degree, 15.7% had a bachelor's degree, 7.8% had a graduate or professional	Focus groups that covered intrapersonal factors: "*Explain why PA might be important to overall health.*". Interpersonal factors: "*Is there anyone that lives close to you that you can be physically active with? If your friends were more active, do you think you would be more active?*" Physical/ social environments: *"Do you think the lack of sidewalks, parks or other open areas in your neighborhood prevent you from being physically activity? Do you think crime or traffic in*	Recreation facilities; schools	**X**		Adult Perceived Barriers to PA: distance, lack of culturally appropriate facilities and programming and cost. Child Perceived Barriers to PA: school PA Policies (8th graders do not get recess time), danger (vandalism and breaking in, hunting occurring in woods). Support Identified by child: fields, physical education classes, softball field, football field, community center. Primary PA facilitators are social/peer interactions and social outlets.

		degree; 19.6% Hispanic or Latino, 50 children; 44% male, 58% 6th grade, 21.6% considered their child Hispanic or Latino.	*your neighborhood prevents you from being physically active?*"				
Moore et al., 2013	Moore JB, Brinkley J, Crawford TW, Evenson KR, Brownson RC. Association of the built environment with physical activity and adiposity in rural and urban youth. *Prev Med.* 2013;56(2):145-148.	284 students from three middle schools in the southeastern United States	PA measured with accelerometer on right hip, participants self-reported demographic characteristics and perceived PA environment via survey.	Streets		**X**	Rural students who indicated many scary dogs in their neighborhood had slightly lower average BMI (-.029). Rural students who indicated walkers/bikers are easily visible, that there were bikeable places within walkable distances, and that there was high traffic in their areas had higher rates of moderate to vigorous PA
Ndirangu et al., 2007*	Ndirangu M, Perkins H, Yadrick K, et al. Conducting needs assessment using the comprehensive participatory planning and evaluation model to develop nutrition and physical activity interventions in a rural community in the Mississippi delta. *Prog Community Health Partnersh.* 2007;1(1):41-48.	21 community members and nine university representatives	Focus group workshops to assess nutrition and health problems and develop a menu of interventions.	Streets; food retail	**X**	**X**	The identified problems were intake of unhealthy foods, lack of nutrition education, and lack of adequate PA. The menu of interventions consisted of seven objectives to address poor nutrition and PA as well as a total of 19 interventions to meet these objectives. Proposed objective and intervention to increase PA in the community, including control loose dogs (work with the mayor's office to enact fines for loose dogs that discourage walkers). Proposed objective and intervention to increase HE include decreasing the amount of unhealthy food and increase the amount of healthy food consumed and implementing grocery store specials on

							healthy foods at the end of the month.
Nothwehr et al., 2014*	Nothwehr F, Haines H, Chrisman M, Schultz U. Statewide dissemination of a rural, non-chain restaurant intervention: Adoption, implementation and maintenance. *Health Educ Res.* 2014;29(3):433-441.	28 adopters: 21 (75%) women; 16 (57%) high school, 6 (21%) 2-year/trade, 6 (21%) 4-year college. 33 non adopters: 47 (65%) women. 2 (5%) less than high school, 13 (42%) high school, 10 (32%) 2 year/ trade, 5 (16%) 4-year college, 1 (3%) Graduate school.	Baseline telephone interview that assessed the owner and restaurants. Questions for owners focused on the main reason (and any other reasons) they decided to participate or not to participate in the study; whether anything would make it easier for them to participate; whether they were contacted about the study by their local health department (yes/no) and whether they talked with anyone else prior to making the decision to participate. Respondents were asked about whether they had participated in a HE program before (yes/no; name of program) and whether they have tried on their own to provide more healthy options (yes/no) and what those efforts entailed. Owners were asked: "*How important it is to them to provide healthy food options for their customers?*" For restaurants: "*How many years the restaurant has been in business?, How many customers are served in an average week and the owner's confidence level that the restaurant will still be in business 2 years from now?*" Maintenance questions for owners were about whether all the table signs were in place and if not, why not. They were also asked to describe any comments received from customers or wait staff about the program since the last time they were interviewed, and	Food retail		**X**	Adopters were more likely than non-adopters to have tried to make healthy changes to their offerings in the past, to provide healthy options, and to be more confident that their restaurant would still be open in 2 years. The top reasons for adopting the program were: it lets customers know what options the restaurant has, the restaurant already provides healthy options, so the program is consistent and able to promote awareness of nutrition. The top reasons for not adopting the program were: no time, not interested, no healthy options available, small restaurant and already provided healthy options. Customer responses to intervention: they appreciate the program, customers made specific reference to items on the sign when ordering or asked questions about healthy items. When asked whether they would change anything about the program, most owners responded no (89%; 88%, 75% and 86%, respectively, across the 3-, 6-, 12- and 18-month follow-up points). A few suggested changes: change appearance of the sign (e.g. add decorative pictures or designs), put signs out intermittently to keep it fresh, add more information about the healthy options and/or advertise the program more. Implementation: On

			whether there is anything they would change about the program. This included: "*Describe any changes to their menu offerings since the last time they were interviewed that would make it easier for customers to make healthy choices.*" At 12 months follow up, owners were asked *"How much they would have been willing to pay for the program, if anything?"*				average, owners requested 20 table signs. All owners who requested signs subsequently reported placing them on the tables. In follow-up surveys, a few variations in implementation were noted. Maintenance: at the 18-month follow-up, 14 reported still using the table signs. In response to whether they had made any healthy changes to their menu since the last telephone interview, 44%, 38%, 29% and 48% at each time point said yes. Time points: 3-month, 6-month, 12-month, 18-month follow-ups.
Novotny et al., 2011*	Novotny R, Vijayadeva V, Ramirez V, Lee SK, Davison N, Gittelsohn J. Development and implementation of a food system intervention to prevent childhood obesity in rural Hawai'i. *Hawaii Med J.* 2011;70(7 Suppl 1):42-46.	40 food demonstrations (22 in community one and 18 in community 2); 1150 Participated in the food demonstrations (646 in community one and 508 in community two); 1582 samples distributed (868 in community one and 713 in community two).	Process evaluation, which included a Store Visit Process Evaluation (SVPE) form to evaluate the success at keeping the promoted food items on the shelf, proper and intact labeling for promoted items, and phase-specific posters visible in the store settings. The Cooking Demo/Taste Test Process Evaluation (TTPE) form evaluated community response to promoted items and/or promoted behavioral changes and rated the likelihood to purchase the promoted items or cook using the promoted methods.	Food retail; local food producers	**X**		Food producers expressed concern about having adequate product, and cost of delivery to stores as compared to working with one central distributor. Food distributors expressed need to sell as much product as possible in the shortest period of time, often resulting in removing newer (healthier) products on the shelf when existing (often less healthful) products with higher turnover could be stocked instead, even when the store owner was prepared to take the risk of lower turnover for a period of time, in order to support local farmers and the provision of healthy products.
Omura et al., 2017	Omura JD, Carlson SA, Paul P, Sliwa S, Onufrak SJ, Fulton JE. Shared use agreements between municipalities and public schools in	1930 municipalities; 1419 in urban areas and 511 in rural areas; Median education level: 854 high school	National Survey of Community Based Policy and Environmental Supports for HE and Active Living included questions about Shared use agreement: "*Has your local government adopted a joint or*	Recreation facilities		**X**	Among 1930 municipalities with a school, 41.6% had a shared use agreement as reported by a local official, 45.6% did not, and 12.8% did not know. Significant differences in prevalence

	the United States, 2014. *Prev Med.* 2017;95 Suppl:S53-S59.	graduate or lower, 1076 some college or higher; Race/ ethnicity: 258 ≤ 50% non- Hispanic White, 1672 > 50% non- Hispanic White	*shared-use agreement or a memorandum of understanding with any school that allows the public to use school recreational facilities (for example, gymnasiums, athletic fields, or playgrounds) during non-school hours?*", "*Who is your joint use agreement with?*", "*What school recreational facilities are covered by the joint or shared use agreement or a memorandum of understanding?*"			existed by population size, rural/urban status, poverty prevalence, median education level, and census region; however, after adjustment for other municipality characteristics significant differences remained only by population size, median education level, and census region. Among municipalities with a shared use agreement, 59.6% covered both outdoor and indoor facilities, 5.5% covered indoor facilities only, and 34.9% covered outdoor facilities only.
Page-Reeves et al., 2014	Page-Reeves J, Cruz T, Davis S. Implementing a childhood obesity prevention coalition in a tribal community in the Southwest. *Hum Organ.* 2014;73(2):183-192.	9 interviews including 5 tribal members.	Interviews with stakeholders. Questions included "*What do you think that (Insert Name of Local Initiative) is attempting to accomplish? How did people in (Las Cruces/Roswell/Tribe) begin thinking about (Insert Name of Local Initiative) as a strategy to use? What motivated the community to participate in (Insert Name of Local Initiative)? How did a coordinated effort around (Insert Name of Local Initiative) get started? How did you / your organization get involved? Who were the key people involved in making (Insert Name of Local Initiative) happen? How did the relationship between (Insert Name of Local Initiative) and the DOH develop? How does the relationship between (Insert Name of Local Initiative) and the DOH work now? When (Insert Name of Local Initiative) was getting started,*	Playgrounds; streets	**X**	The Healthy Kids Tribal Community conducted a Walkability Assessment of the built environment to capture perspectives on the safety of roads on tribal lands, what it would take to get people outside more, neighborhood cleanliness, sufficiency of signage for safety and information, and effectiveness of lighting infrastructure. Participants indicated that the built environment and walkability assessment was a "real eye-opener." It made them think differently about things like playgrounds, crosswalks, and transportation in terms of health.

			did it have a lot of support from people locally, or was there resistance, or was the response neutral? What role do you feel that having a coalition of partners has played in this effort? How has this changed over time? What do you see as the most important factors in creating (Insert Name of Local Initiative)? What do you think are the most important factors in keeping (Insert Name of Local Initiative) going? What financial or other resources have been important in allowing (Insert Name of Local Initiative) to function and in promoting success? 1 How do you think that (Insert Name of Local Initiative) has affected the community? What have been the biggest successes? What have been the biggest challenges? Where would you like to see (Insert Name of Local Initiative) in the next five years? What advice do you have for other communities that are thinking about starting a similar program? Is there anything else you think that I should know about (Insert Name of Local Initiative)? Is there anyone else that you think I should speak with about this?"			
Panzera et al., 2017	Panzera AD, Bryant CA, Hawkins F, et al. Mapping a WIC Mother's journey: A Preliminary Analysis. *Soc Mark Q.* 2017;23(2):137-154.	19 women, 16 White, 1 African American, 1 mixed race.	Direct observation was performed to explore the process that a typical WIC participant encounters while using the program; observational approaches were augmented with participant observation to provide the	Food assistance programs	**X**	Perceived benefits indicated included healthy food access, financial assistance, education and advice, access to routine examinations, health screenings and nutritional advice. Mothers identified childcare, transportation

			researcher with the experience of shopping for WIC foods in a supermarket as though she was a single mother with a young infant. Focus groups and an individual interview were conducted to provide deeper understandings of circumstances along the process of participation and reasons why mothers discontinued participation				issues, long waits, confusion regarding eligibility, problems scheduling appointments, and stigma as barriers to their ability to retrieve food.
Perry et al., 2011	Perry CK, Saelens BE, Thompson B. Intrapersonal, behavioral, and environmental factors associated with meeting recommended physical activity among rural Latino youth. *Pediatr Exerc Sci.* 2011;23(4):521-536.	773 students, 51% girls	Survey given to students during first period, measured park use and activity, PA engagement and motivators/barriers, risk and protective factors to PA, and demographics. PA questions include "*On how many of the past 7 days were you physically active for a total of at least 60 minutes per day? In an average week when you are in school, on how many days to you go to physical education (PE)?" S*chool activities question include: *"During the average week, on how many days do you participate in supervised after-school activities either at school or away from school?*"	School		**X**	Regarding use of parks, 32% of girls identified time and 8% identified transportation as a barrier. 22% of boys identified time and 11% identified transportation as a barrier. Participation in an organized after school activity ($p < .001$) and in physical education (PE) classes 5 days a week ($p < .001$) were strongly associated with meeting recommended physical activity level. Making PE available 5 days a week and creating opportunities for organized after school physical activity programs may increase the number of rural Latino middle school youth who meet recommended physical activity level.
Pinard et al., 2016	Pinard CA, Fricke HE, Smith TM, Carpenter LR, Yaroch AL. The future of the small rural grocery store: A qualitative exploration. *Am J Health Behav.* 2016;40(6):749-760.	15 storeowner key informants; 14 male, one female; 4.5% non-white.	Semi structured interviews to collect information on stores; question for stores owners include, "*What type of store or stores would you consider yours to be? How long has this store been in business? Do you consider your store location to be in an urban or rural area? Do you consider your store location to be in an urban or rural area?*" Question	Food retail	**X**		Storeowners reported strategies they employ to remain competitive, such as selling alcohol and tobacco, focusing on customer service, and ensuring quality of products. Manufacturer and distributor agreements often put constraints on their business models. Key challenges reported included a dwindling population and

			about store operations "*Do you consider your store location to be in an urban or rural area? What do you think draws people to your store specifically? Are there any reasons you can think of that might deter potential customers from visiting your store?*"				competition with larger chains in neighboring towns set in a sparsely populated landscape.
Polacsek et al., 2018	Polacsek M, Moran A, Thorndike AN, et al. A supermarket Double-Dollar Incentive Program increases purchases of fresh fruits and vegetables among low-income families with children: The Healthy Double Study. *J Nutr Educ Behav.* 2018;50(3):217-228 e211.	204 intervention 164 (80.4%) females; 179 (87.8%) non-Hispanic White, and 197 control participants) 152 (77.2%) females; 178 (90.4%) non-Hispanic White.	Tracking purchases via a loyalty card to measure weekly spending in dollars that included questions on purchasing behaviors, participations in food assistance programs and food-purchasing and preparation, "*how often (past week) I purchased already prepared or* ready to eat foods*; how often I or someone in my household prepared meals from scratch, and how often I use Hannaford's Guiding Stars when shopping.*"	Food assistance programs		**X**		Intervention including same day coupons were redeemed among 53% of eligible baskets. Total weekly Food & Vegetable (F&V) spending increased in the intervention arm compared with control ($1.83; 95% confidence interval [CI], $0.29 to $3.88). Secondary analyses revealed greater increases in F&V spending among SNAP-eligible participants who redeemed coupons ($5.14; 95% CI,$1.93 to $8.34) than among non–SNAP eligible participants who redeemed coupons ($3.88; 95% CI, $1.67 to $6.08). Intervention increased F&V spending in a low-income community. Customers who were eligible for SNAP saw the greatest F&V spending increases. Financial incentives for F&V are an effective strategy for food assistance programs to increase healthy purchases and improve dietary intake in low-income families.
Powers et al., 2019	Powers AR, Brock RW, Funderburk K, Parmer SM, Struempler B. Multilevel Faith-	60 answered questions, 16 (27%) male, 44 (73%) female, 10 (17%) some high	Survey was adapted from the Faithful Families Faith Communities Assessment, Live Well Greenville House of Worship Assessment, and the	Churches; community gardens	**X**	**X**	Shifts in public health approaches caused participants to report significant improvements in HE encouragement, shopping

	Based Public Health Initiative in rural Alabama, 2017. *Prev Chronic Dis.* 2019;16:E117.	school, 13 (22%) graduated from high school or has GED, 21 (35%) some college, 16 (27%) graduated from college. 52 of 52 (100%) Hispanic, 1 (2%) of 59 American Indian or Alaskan Native, 58 (98%) of 58 Black or African American.	Texas A&M Capacity and Readiness Church Health Assessment. The survey included questions on PA opportunities and guidelines on requiring certain foods in snacks or meals offered in faith communities.			practices, and vegetable consumption. Sixteen Extension personnel implemented Live Well Faith Communities (LWFC) in 14 faith communities in 8 rural counties with adult obesity rates greater than 40%. Faith communities implemented 11 policy, systems, and environmental (PSE) strategies. Of 8 faith communities adopting guidelines requiring healthy options at meals or snacks, 2 required fruits, 3 required vegetables, 2 required nonfried foods, and 1 required low-sugar or no-sugar-added foods. One faith community created an onsite garden, one began providing PA opportunities at meetings or functions, and one began offering group exercise classes.
Quandt et al., 2006	Quandt SA, Shoaf JI, Tapia J, Hernandez-Pelletier M, Clark HM, Arcury TA. Experiences of Latino immigrant families in North Carolina help explain elevated levels of food insecurity and hunger. *J Nutr.* 2006;136(10):2638-2644.	Study 1 included 80% females, 3.8% never attended school, 58.5% completed primary school, 32.1% secondary, 5.7% preparatory. Study 2 included 100% female, 68.8% completed primary school, 20.8% secondary school, 10.4% preparatory. Study 3 included 100% female, 47.3% completed primary school, 37.3% secondary school, 13.6%	Survey and in-depth interviews; Studies 1 and 3 were about environmental and occupational health concerns as well as the immigrant experience. Study 2 included food insecurity and on the households' experience in attempting to meet a variety of family needs.	Home environment; food retail; food assistance programs	**X**	Household food insecurity without hunger ranged from 35.6% to 41.8%, compared with 13.3% in the U.S. The highest rates of hunger reported were 18.8% (moderate hunger) and 16.8% (severe hunger) in an urban sample. Cyclic shortages affect the type of food available, primarily through fluctuations in money available for food purchase. Many families report cutting back on foods they consider expensive (meat and fruit) and unnecessary (soda, snacks, eating out). Some make substitutions of lower-cost products such as Kool Aid for fruit juice. As with food

		preparatory school. Study 4 included 75.2% female, 7.9% never attended, 37.6% completed primary school, 29.7% secondary school, 13.9% preparatory, 2% GED, 8.9% college.					quantity, parents overwhelmingly report attempting to maintain food quality for children at the expense of adults. Those who have been in the U.S. for several seasons report that, after these initial reactions, there is a process of adjustment that has 3 stages. Accommodation is the first stage, which entails getting used to having less. The next stage is action, or coming to terms with the situation and asking for help, whether from family members, private food pantries, or social services. Finally, some reach a stage of empowerment in which they plan for shortages so they can take care of themselves. This includes raising gardens, buying canned and dried staples to save for winter, or putting extra cash in the bank.
Ramadurai et al., 2012	Ramadurai V, Sharf BF, Sharkey JR. Rural food insecurity in the United States as an overlooked site of struggle in health communication. *Health Commun.* 2012;27(8):794-805.	86 participants in 12 focus groups; 7 females and 4 males in focus group 1, education completed: 9.9 ± 3.9 (0–12), all African American. 2 females and 1 male in focus group 2, education completed: 10 ± 1.7 (9–12), 3 Hispanic. 8 females in focus group 9, education completed: 10.3 ± 2.9 (4–12), 8	Focus groups, questions include "*Tell me a brief story or anecdote that describes this community at its best; that is, when things are functioning well, when you feel good about living here. Similarly, tell me a brief story that describes this community when it's not functioning so well, when you're not feeling good about this being your home. What foods in particular is this community known for? How about foods that are special to your cultural group? And foods that are special to you and your family? We're interested in how available food is in this*	Home environment; food assistance programs; food retail		**X**	Barriers: stores offer outdated foods, too expensive, lack of variety of foods in store, lack of variety of food store types. For several rural communities, only convenience stores were available to purchase food items, most require transportation to get groceries (far distance). Some are turned down by governmental programs like SNAP because they make too much. Facilitator: Home gardening increases access (if able to maintain garden), Food banks increase access to food, but not fresh foods.

Hispanic. 3 females and 4 males in focus group 3, education completed: 111.1 ± 1.1 (10–12), 7 non-Hispanic White. 12 females and 2 males in focus groups 5 and 6, education completed: 11.7 ± 1.1 (8–12), 14 African American. 5 females and 3 males in focus group 4, education completed: 9 ± 5.5 (0–12), 8 non-Hispanic White, 5 females and 2 males in focus group 10, education completed: 7.6 ± 5.6 (0–12), 7 Hispanic. 7 females in focus group 8, education completed: 12 ± 0 (12), 7 African American. 5 females and 2 males in focus group 7, education completed 11.7, 7 African American. 4 females and 1 male in focus group 12, education completed: 11 ± 2.2 (7–12), 5 non-Hispanic White, 4 female and 2 male	*community. What comes to mind when I use the term "food availability? what's easy to get, difficult to get locally; how's the quality of what's available. How do you make your food dollars stretch? In what ways are your food choices and eating patterns shaped by your social activities? Relationships with family and friends? Community events, such as neighborhood fairs, parties, church functions? In what ways are your food choices and eating patterns shaped by where and when you work? Childcare and household responsibilities? Transportation to and from work. Cost of food & gas? In what ways are your food choices and eating patterns shaped by your ideas about what it means to be healthy? From where or from whom do you get information about nutrition? How does what is shown on TV impact what and how your family eats? How about other popular media, like radio, magazines, the Internet? If this group could be in charge of improving nutrition for this community, what changes would you want to make from the way things are now? What are the main obstacles to achieving this ideal? Who are the people or organizations in this community that you'd say could tell a visitor everything that's going on? who are the people or which organizations would you identify as "the glue" which*

		in focus group 11, education level: 11.7 ± 0.5 (11–12), 6 non-Hispanic White.	*helps hold this community together? Anything else anyone would like to add that we haven't already spoken about?*"				
Riley-Jacome et al., 2010*	Riley-Jacome M, Gallant MP, Fisher BD, Gotcsik FS, Strogatz DS. Enhancing community capacity to support physical activity: The development of a community-based indoor-outdoor walking program. *J Prim Prev.* 2010;31(1-2):85-95.	17 participants (15 females, 2 males); 52% attended some college; 42.5% retired.	Questions modeled after the Behavioral Risk Factor Surveillance System (BRFSS) modules on walking, leisure time PA and previous exercise history. Focus groups with school administrators to select school location and then focus groups with program participants. Questions include: "*How do school administrators view existing walking programs? What logistical issues and potential program costs (e.g., transportation, labor, insurance, and advertising) need to be considered? Who should run the program? How will participants be registered? What hours should the program be available? Would extra insurance coverage be necessary?*"	Schools		**X**	Building facilities, distance to school buildings, conflicts with other school activities, and lack of personnel to administer the program were identified by all three groups as barriers to implementing and utilizing a school walking program. Site specific barriers: building temp, hours of operation, school closings. Personal barriers included caretaker duties, time constraints, boredom. Administrators were uniformly very supportive of their walking program and recommended that other districts implement similar programs. Using school facilities can be an inexpensive and effective means of increasing PA levels in rural communities with limited access to PA resources. Study used school to implement a walking program. Choice of setting for walking: environmental benefits of program included safe, convenient, inexpensive, and weather independent. Indoor walking programs make it so that you can walk non-stop (don't have to stop for cars, curbs, holes in the ground) Being able to choose level or pace of walk (i.e., schools with a variety of routes and corridors, or a mixture of stairs and hallways, were considered

						particularly attractive.) Existing school insurance policies were sufficient for the walking programs, and no additional staff time was reportedly required at any of the schools. Over the 9-week program,30 individuals recorded 222 h of walking at the school with an average of 7.4 h each. Another 25 walkers recorded 680,069 steps with an average of 27,292 steps each.
Russomanno & Jabson, 2016	Russomanno J, Jabson JM. Farmers' markets' uptake of food assistance programmes in East Tennessee, USA. *Public Health Nutr.* 2016;19(15):2829-2837.	12 farmers' market representatives.	Semi-structured interviews. Questions include, "*Which farmers market are you representing? Tell me about your background and how you came to fill your current position? What are your primary responsibilities at the market? What can you tell me about the relationship of SNAP to farmers' markets? Does your market currently accept SNAP benefits?*"	Food assistance programs; food retail	**X**	Participants noted that markets run by boards of directors are less likely to implement a market-wide SNAP program. Managers from markets where one or more vendor accepts SNAP via a direct vendor model were reluctant to implement SNAP market-wide. The incentives provided under MarketLink were mentioned by participants as potential tools to encourage markets to implement a SNAP program. Challenges: Participants in the present study reported receiving minimal stipends from their city or county governments and rely primarily on weekly vendor booth fees to supplement operating expenses. Without adequate external funding to implement and sustain a SNAP program, rural markets may not have the capability to maintain SNAP equipment or afford EBT credit card transaction fees. Representatives from all three SNAP-authorized markets reported that they applied to

							take part in a 'double-up' program sponsored by the AARP Foundation (formerly the American Association of Retired Persons) beginning in autumn 2015. This program allows SNAP dollars to be 'doubled up' to a maximum of $U.S. 10·00, meaning if a SNAP recipient redeems $U.S. 10·00 at a local farmers' market, the market would then match that amount, giving the participant a total of $U.S. 20·00 to spend at the market
Sánchez et al., 2014*	Sanchez V, Hale R, Andrews M, et al. School wellness policy implementation: insights and recommendations from two rural school districts. *Health Promot Pract.* 2014;15(3):340-348.	9 key informant interviews and 2 focus group	Key informant interviews and focus groups on barriers, facilitators and recommendations regarding school nutrition and PA policy implementations. Questions include, "*What does the implementation of school wellness policy look like from the points of view of those implementing the policy and those most directly affected by it (e.g., students)?, How can the community health council and other partners support implementation of the wellness policies in the two districts?*, and *"How can the community health council and other partners support implementation of the wellness policies in the two districts?*"	Schools		**X**	**X**	A frequently cited PA barrier was the limited, formal physical education requirement (one middle and one high school physical education class). A key nutrition-related barrier in both districts was the presence of commercial vendors outside the school boundaries. Participants also provided recommendations to improve policy implementation, including wellness policy training for school personnel and parents, improving the taste, nutritional value of, and choices in cafeteria food; and involving the community health council to promote support of the policies.
Sanderson et al., 2002	Sanderson B, Littleton M, Pulley L. Environmental, policy, and cultural factors related to physical activity among rural, African American	61 Women; 67% some education past high school, All African American.	Focus groups about PA personal, psychological and biological barriers: social and physical environment support and barriers, policy, cultural factors were also discussed.	Streets; recreation facilities; parks; trails; playgrounds			**X**	Environmental barriers to PA: hot weather, lack of safe places to walk, lack of facilities, distance to facilities, lack of sidewalks, streetlights, and parks, poorly equipped or inadequately maintained parks. Environmental facilitators to

	women. *Women Health.* 2002;36(2):75-90.					PA: quiet, rural area and low-traffic county roads. Suggestions for improving PA: Build opportunities for pleasant walking experiences: more sidewalks–inside and outside of city limits; walking and bicycle trails; shopping mall build a recreational or community center which includes specialty areas, programs; create an outdoor family activity area; walking track or trail; playground area in the center of the track/trail for children; include playground equipment for children build sport areas; ball fields; and golf course.
Sanderson et al., 2003	Sanderson BK, Foushee HR, Bittner V, et al. Personal, social, and physical environmental correlates of physical activity in rural African-American women in Alabama. *Am J Prev Med.* 2003;25(3 Suppl 1):30-37.	African American women n=567: 13.0% (n=75) college graduate, 27.4% (158) some college, 47.1% (272) high school (or general equivalency diploma), 12.5% (72) less than high school	Self-reporting PA from three categories "*(1) inactive (not engaging in any moderate or vigorous activities); (2) insufficient (not meeting recommendations for either moderate or vigorous activities); and (3) meeting recommendations (engaging in moderate PA for at least 30 minutes for five times per week or vigorous activity for at least 20 minute for three times per week)*"; Three social environmental scales "*(social issues, social roles, and sense of community),"*which included participants' feelings and perceptions when others were performing PA, women's participation in other roles that decrease exercising and feelings about the neighborhood.	Recreation facilities; workplaces	**X**	No physical environment correlates were found to be different across groups that exercised and groups that did not exercise. N=221 (38%) met the recommended amount of exercise, n=346 (60%) did not meet the recommended amount of exercising. More exercise facilities at work sites were the most common response to increasing exercising among employed women and increasing exercising facilities in communities were cited most frequently.

Scanlin et al., 2014	Scanlin K, Haardoerfer R, Kegler MC, Glanz K. Development of a pedestrian audit tool to assess rural neighborhood walkability. *J Phys Act Health.* 2014;11(6):1085-1096.	23 participants, 10 (43%) male, 13 (57%) female; 2 9% Less than $10,000, 4 (17%) $10,001 to $25,000, 8 (35%) $25,001 to $50,000 5 (22%) $50,001 or more; 10 (43%) White, 13 (57%) Black.	Perceived environment and PA measures from the Healthy Rural Communities 2 (HRC2), to measure neighborhood walkability, adapted from Echeverria et al and Saelens et al, and access to PA equipment was measured using questionnaire from Sallis et al. The International PA Questionnaire (IPAQ) included the question "*Now think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.*"	Home environment; streets.		**X**	Walkability in the audited area was low with even the best segments demonstrating only moderate support for walking. There were no significant correlations between the neighborhood walkability score and self-reported neighborhood walkability, time spent walking, sedentary behavior, or BMI; however, a few correlations within the social/dynamic domain were significant. The only statistically significant correlations between observations and self-reported data was between the Social/Dynamic Environment domain scores and the self-reported measures, indicating that a supportive Social/Dynamic Environment is negatively correlated to having exercise equipment available in the home, time spent sedentary, and self-efficacy regarding PA ($p<.05$).
Schetzina et al., 2009	Schetzina KE, Dalton WT, 3rd, Lowe EF, et al. Developing a coordinated school health approach to child obesity prevention in rural Appalachia: Results of focus groups with teachers, parents, and students. *Rural Remote Health.* 2009;9(4):1157.	23 teachers (96% female), 12 parents (92% female), and 19 fourth grade out of 97 students (58% female)	Open-ended questions asking about perceptions of school nutrition, physical education, family and community involvement with children's eating and PA; questions include: '*What do you think about the food served in the school cafeteria?')* and '*How much PA and physical education do students get at school?*'.	Schools	**X**	**X**	Community stakeholders reported that foods and drinks consumed by students at school should be healthier and that they should have more opportunities for PA. Barriers and limitations include the school environment, academic pressures, and lack of parental support. Parents in favor of increasing PA during school and thought that parent volunteers should help students select foods in the cafeteria. Students cited examples of how diet and PA

							affect their health and school performance.
Scott & Wilson, 2011	Scott AJ, Wilson RF. Social determinants of health among African Americans in a rural community in the Deep South: An ecological exploration. *Rural Remote Health.* 2011;11(1):1634.	18 African American community members	In-depth interviews included individual factors questions '*What are the attitudes toward health in African Americans here?*', '*Tell me about any health education or promotion activities you've been involved in'*. Relational question: "*Tell me about cooperation among the churches, especially for health-related activities.*', '*How well do African Americans support each other here?*'. Environmental questions: "*Where do families eat when they eat out?*', '*What's the job market like here?*'. Structural questions: '*How inclusive is city leadership?*', '*How are decisions made in the schools?*'. Superstructural questions: '*Tell me about race relations in the community*.' '*Tell me about making ends meet here.*'	Recreation facilities; streets; food retail	**X**	**X**	PA: A common complaint expressed by parents, teachers, counselors, and community leaders was lack of accessible venues for people to recreate and be active. There is no community swimming pool, bowling alley, ice rink or other gathering place. There are few sidewalks and bike paths. Available recreation center outside of town center off a two-lane highway with no sidewalks-transportation is a barrier to use. HE: Grocery store and convenience store have limited selection of produce and with little competition can set their own prices.
Seguin et al., 2014	Seguin R, Connor L, Nelson M, LaCroix A, Eldridge G. Understanding barriers and facilitators to healthy eating and active living in rural communities. *J Nutr Metab.* 2014;2014:146502.	95 participants, 7 (7.4%) High school, 19 (20.0%) some college/technical school, 8 (8.4%) associate's degree, 26 (27.4%) Bachelor's degree, 30 (31.6%) Master's degree or higher, 5 (5.3%) Graduate or professional; 89 (94.7%) White, 1 (1.1%) African American, 4 (4.3%) American	Focus groups that included open ended questions on barriers and facilitators of HE and PA.	Recreation facilities; food retail; home environment; community garden	**X**	**X**	Limited time, social norms, and distances from or lack of exercise facilities were common PA barriers. Facilitators for PA included social support, dog walking, and availability of affordable facilities. HE barriers included the perception that healthy foods were too expensive; calorically dense large portion sizes served at family meals; and frequency of eating foods away from home, which were perceived as generally unhealthy. HE supports included culture/value around local food gathering (e.g.,

		Indian/Alaskan Native.				hunting and gardening) and preservation (e.g., canning and smoking). Friends and family were frequently identified as key influencers of eating and PA behavior.
Shah et al., 2019	Shah HD, Adler J, Ottoson J, Webb K, Gosliner W. Leaders' experiences in planning, implementing, and evaluating complex Public Health Nutrition Interventions. *J Nutr Educ Behav.* 2019;51(5):528-538.	49 recruited participants, 36 in interviews and 13 in panel; 18% total large urban (13% interview and 5% in panel), 17% small to midsize urban (12% interview and 5% panel), 49% total rural (36% interview and 13% panel)	A semi-structured interview guide, including questions: "*How do you decide what to focus on in your work plan? How collaboration occurs as part of SNAP-ED planning, have you collaborated with local implementing agencies, sub-contractors, and County Nutrition Action Plan (CNAP) to develop your plan? Would you describe approaches that worked particularly well in collaborative planning with any or all of the groups we have discussed?* *What, if any, difficulties has your local health department (LHD) had in collaborating to develop the Integrated Work Plan (IWP)?* *Could you start by describing which SNAP-Ed activities your local health department (LHD) is working on currently that you are most excited about?* *Which SNAP-Ed activities have been most challenging for your LHD to implement and why?* *do you have an example of a good partnership your LHD has formed and why it has worked well? What training or support on evaluation does your LHD need?* *What skills and expertise would you most like to develop in your SNAP-Ed team in the near future?*"	Food assistance programs	**X**	Policy, systems, and environmental change interventions: SNAP-Ed leaders identified a need for standardized evaluation protocols and frameworks for Policy System Environment and nutrition education programs. Processes: Leaders reported weighing many types of information, including community needs, partnering agency resources, feasibility, policy windows, local politics, community acceptability, and funding levels while considering program delivery. Barriers to Policy System Environment changes: the complexity of frequent staff changes, and maintaining momentum, challenge of aligning interests with retail or corner stores that sold produce and other goods, or grocery stores. Hiring, retention, and capacity were important challenges in rural settings. Local leaders in rural settings highlighted myriad staffing challenges, including a limited hiring pool and an inability to offer competitive salaries.

Sharkey et al., 2011	Sharkey JR, Dean WR, Johnson CM. Association of household and community characteristics with adult and child food insecurity among Mexican-origin households in colonias along the Texas-Mexico Border. *Intl J Equity Health.* 2011;10.	Total n = 610 adult women: 31.8% < 7th grade, 32.8% 7th -11th grade, 35.4% high school graduate; 61.8% Mexican, 27.5% Mexican American.	Colonia Household and Community Food Resource Assessment (C-HCFRA) included items about access and mobility, food costs and federal and community food and nutrition assistance programs, quality of food environment, food security, eating behaviors and alternative food sources. 12-item Radimer/Cornell measures of hunger and food insecurity. Self-reported daily servings of fruit, vegetables, sugar-sweetened beverages, beans, and lean protein (e.g., fish and chicken), weekly frequency of fast-food meals and a regular breakfast meal.	Food retail	**X**	Average distance to nearest grocery store/store where participants purchased most of groceries was 10.0 miles +/- 62.3% of stores were super makers and 12.9% of stores were supercenters of mass merchandisers. 92.5% of participants reported little variety in types of foods, 93.1% reported few grocery stores or supermarkets, 94.4% reported that food prices are high.24.9% reported purchasing prepared food from a neighbor or friend, 29.7% reported purchasing food from mobile food vendors, 30.7% reported purchasing food from pula (flea market). Greater distance to their food store and perceived quality of the community food environment increased the odds for food insecurity.
Sharkey et al., 2012	Sharkey JR, Dean WR, Johnson CM. Use of Vendedores (Mobile Food Vendors), Pulgas (Flea Markets), and Vecinos o Amigos (Neighbors or Friends) as Alternative Sources of Food for Purchase among Mexican-Origin Households in Texas Border Colonias. *J Acad Nutr Diet.* 2012;112(5):705-710.	3.6% not reported educational background, 30.7% <7th grade, 31.6% 7th-11th grade, 31.4% high school graduate	Colonia Household and Community Food Resource Assessment (C-HCFRA) that included demographic questions, participation in food and nutrition assistance programs, access and mobility status, food stores, participants' perception of community food environment, household food security, and alternative food sources. 12-item Radimer/Cornell measures of hunger and food insecurity.	Food retail	**X**	More than 90% of participants strongly agreed or agreed that there was little variety in types of foods, few grocery stores or supermarkets, or high food prices in their community. Child food insecurity was associated with purchasing food from mobile food vendors, while household food security was associated with using pulgas or neighbors/friends. School nutrition program participants were more likely to live in households that depend on alternative food sources.

Sherry, 2008	Sherry JS. An Evaluation of Elementary School Nutrition Practices and Policies in a Southern Illinois County. J Sch Nurs. 2008;24(4):222-228.	8 food service managers: 4 reported their schools had a nutrition program that was fully in place with decreased fat and sodium content. The other 4 stated that was partially in place in their schools.	The School Health Index Module 4: Nutrition Services questionnaire has 14 discussion questions. Each question is scored on a Likert-type scale (3 = fully in place, 2 = partially in place, 1 = under development, 0 = not in place). Three open-ended planning questions are also included.	Schools		**X**	Four of eight schools did not promote healthy cafeteria practices. The criteria for this were whether cafeterias promote and advertise healthy choices by means such as bulletin boards, promotional materials, or highlighting healthy cafeteria selections. The other four schools used at least three or more advertisement methods (school-wide video or audio announcements, menus highlighting choices, taste-testing opportunities) to promote and market healthy nutritional practices. Some of the promotional practices were posters and information from the Dairy Council or other governmental agencies, as well as posting the Food Guide Pyramid. All eight schools had newer or remodeled cafeteria facilities with up-to-date equipment. Four schools met all nine criteria for a safe, clean, and pleasant environment. The other four had all criteria in place except "age-appropriate decorations" in the cafeteria, such as posters, and Food Guide Pyramids that were age appropriate.
Shores et al., 2009	Shores KA, West ST, Theriault DS, Davison EA. Extra-Individual correlates of physical activity attainment in rural older adults. *J Rural Health.*	449 respondents: 53.2% male, 46.8% female; income: 29.3% <$20,000, 40% between $20,000-$60,000, 13.5% between $60,001-$100,000,	Mail in survey measuring PA levels, perceptions of social support, safety in PA areas, facility access, and neighborhood walkability	Recreation facilities; streets		**X**	Neighborhood walkability was not a significant predictor of PA achievement. Perceived safety (p=.01), and access close to home (p=.01) was a significant predictor meeting PA recommendation. 25% of variance between achievers and non-achievers was due to

	2009;25(2):211-218.	8.3% >$100,000; 94.9% White, 0.2% Asian, 0.4% African American, 4.0% Native American, 0.4% Other.					activity area close by, perceived social support, and perceived safety of the activity area.
Shores et al., 2010	Shores KA, Moore JB, Yin ZN. An examination of triple jeopardy in rural youth physical activity participation. *J Rural Health.* 2010;26(4):352-360.	In county 1, 74 student, 45% male, 55% female; 34% 4th grade, 32% 8th grade, 34% 11th grade; 54% Black, 43% White (non-Hispanic). In county 2, 74 students, 50% male, 50% female; 34% 4th grade, 34% 8th grade, 32% 11th grade. 4% Black, 90% White (non-Hispanic), 3% Hispanic.	School administered survey measuring self-efficacy for PA, social support/influence on PA, access to exercise facilities, overall youth PA, and demographics. Access to exercise facilities was determined by summing the number of locations that youth indicated were available to them for PA. Youth were presented with 4 possible activity locations (park, recreation center, school grounds, and yard). System for Observing Play and Recreation in Communities (SOPARC).	Recreational facilities, schools		**X**	PA participation decreases with the presence of environmental barriers. In county 1, 12.51% of students reported having access to 0 PA sites, 23.61% reported having access to 1 PA site, and 63.97% reported having access to 2 or more PA sites. In county 2, 9.94% of students reported having access to 0 PA sites, 32.43% reported having access to 1 PA site, and 57.73% reported having access to 2 or more PA sites.
Smith & Morton, 2009	Smith C, Morton LW. Rural food deserts: Low-income perspectives on food access in Minnesota and Iowa. *J Nutr Educ Behav.* 2009;41(3):176-187.	Minnesota n=21, 8 (38%) male, 13 (62%) female; 2 (9.5%) less than 8th grade, 12 (57%) 8th- 12th grade, 4 (19%) high school diploe/ GED, 1 (4.25%) associate degree, 2 (9.5%) missing data; 1 (4.25%) American Indian, 17 (81%) Caucasian, 2 (9.5%) Hispanic, 2 Other, 1 (4.25%) missing data. Iowa n=36	Focus groups on civic engagement, including the questions: "*How active are civic groups and organizations within your county?*", "*To what extent do communities engage in solving food problems? What groups or organizations focus exist whose activities focus around food security, food banks, food shelves/pantries, farmers' markets, food coalitions, planning groups, alternative food systems such as community-supported agriculture (CSA), food cooperatives, or community gardens?*", "*To what extent have grants, projects, and programs helped alleviate food*	Community gardens; food retail; local food producers	**X**		Dominant themes were identified from focus group discussion: structure of place or the external food environment that influence food choice and access. Rural dwellers believed they had less access to reasonably priced food with fewer choices. Discussants identified lack of competition, lack of transportation, the high cost of food, and lack of variety of food choices at both retail and grocery stores as barriers to healthier eating. Access to alternative components of the retail food system, like gardens, roadside stands, and CSA were viewed as important

		12 (33%) male, 24 (67%) female; 7 (19%) less than 8th grade, 8 (22%) 8th-12th grade, 12 (33%) high school diploma or GED, 3 (8.3%) associate degree, 1 (2.7%) MS or PhD completed, 2 (5.5%) missing data.6 (16.6%) American Indian, 1 (2.7%) Asian, 23 (64%) Caucasian, 6 Other.	*insecurity?*", "*How easy is it for at-risk groups (elderly and low-income) to have access to public transportation to access food resources?*", "*Are food assistance programs, such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), available, and what are their working hours?*", "*To what extent has the community undertaken initiatives to increase the food infrastructure?*", and "*What is the availability of food programs for senior citizens?*"				food resources. Residence in a rural community shaped the food system infrastructure and therefore limited access to food resources.
Snyder et al., 2019	Snyder K, Rida Z, Hulse E, Dev D, Dinkel D. Exploring rural and urban Go NAP SACC trained child care providers perceptions and needs regarding the promotion of physical activity and healthy eating. *Cogent Soc Sci.* 2019;5(1).	1 (8.4%) male, 11 (91.6%) females; 11 (91.6%) White, 1 (8.4%) African American.	35 semi-structured interview guide: "*What healthy behaviors do you promote at your child care center or home?* *How do you promote/encourage PA (nutrition)?* *Do you have any intentions to change your current nutrition or PA practices? If so, what are you wanting to change? How important is it for you to promote PA (HE) to young children? Why?* *Tell me about your confidence in your personal ability to promote PA (HE) with children in your care? What do you think children learn about healthy behaviors by being in your care?*". Personal cognitive factors: "*If you want more information regarding PA/HE where do you go? If you want more information regarding PA/HE where do you go?*	Childcare; home environment	**X**	**X**	Behavioral, cognitive factors and environmental factors were all identified as themes by participants. Subthemes for behavioral factors included ample opportunities for play, natural promotion of PA, rural providers active involvement in PA, verbal promotion of HE promotion. Subthemes for cognitive factors included personal experience impacts self-efficacy, value of healthy habits, Nutrition and PA Assessment in Child Care (Go NAP SACC) serves as an ongoing resource, lack of knowledge of PA and HE recommendations. Subthemes for environmental factors included: space and funding hindering PA, cost of healthy, family style dining creates positive food choices and healthy role models, and opportunities for further improvements.

			What do you feel like you could be done in your center or home to help children be more active (eat healthier)? What barriers do you have for providing a physically active (nutritious) environment?" Environmental factors: "*What is the health culture like at your childcare center/home for you or your staff?* *If you could design any type or initiative or training to improve PA and or HE in your center or home environment, what would you do?*"			
Thatcher et al., 2017	Thatcher E, Johnson C, Zenk SN, Kulbok P. Retail food store access in rural Appalachia: A mixed methods study. *Public Health Nurs.* 2017;34(3):245-255.	9 participants; all women; all non-Hispanic white.	In store audit to measure availability, price, quality and total score by store type. Interviews on personal and family demographics, and participation in nutrition assistance programs. Questions include "*How would you describe the food in or near this county? How do stores compare with other counties? Tell me about a grocery shopping trip that is typical for you. Could you describe a typical month in terms of food shopping or getting food from different sources? Which store do you go for a major shopping trip? How often do you do a major shopping trip at that store? How do you decide what food to buy? How do you make your food dollars stretch? If your run short on food, what do you do? How do you decide where to shop for food? What are some stores close by that you rarely go to? Why? What do you like/dislike about the*	Food retail	**X**	Characteristics of food retail stores influence shopping behavior. Supermarkets had better availability of healthful foods, followed by grocery stores, dollar stores, and convenience stores. On average, participants lived within 10 miles of 3.9 supermarkets or grocery stores, and traveled 7.5 miles for major food shopping. Participants generally shopped at the closest store that met their expectations for food availability, price, service, and atmosphere.

			stores where you shop? What are some things about this store that make it easy or hard to shop at this store? Which stores are easier or harder to use WIC or SNAP? Why?" Additionally, participants were asked to describe their food shopping patterns including specific store destinations, trip frequency, and type of shopping trips (e.g., major food restocking and fill-in shopping). The second session was a "go-along" interview.				
Thompson et al., 2002	Thompson JL, Allen P, Cunningham-Sabo L, Yazzie DA, Curtis M, Davis SM. Environmental, policy, and cultural factors related to physical activity in sedentary American Indian women. *Women & Health.* 2002;36(2):59-74.	30 American Indian women; 96.7% had completed high school, 13.3% were college graduates. More than 50% had taken some technical or college courses.	Open-ended questions used in the focus groups about factors contributing to PA, including socio cultural environment and physical environment and policy.	Recreation facilities; trails; streets; workplace		**X**	Work environment barriers to PA: lack of employer-supported programs and events, brief lunch breaks not conducive to being active. Community environment barriers to PA: lack of paved roads, lack of shoulders on sides of roads, and lack of accessible walking trails, weather - wind, blowing dust, heat, lack of access to affordable and convenient facilities, stray dogs, snakes, dangerous drivers, crime. One reservation did not have adequate quantities of clean, safe drinking water in the summer, leading to problems with dehydration and inability to bathe after PA. Suggested interventions that would be motivators for PA included access to convenient, affordable facilities and safe walking trails.
Turner et al., 2016	Turner L, Eliason M, Sandoval A, Chaloupka FJ. Increasing	23.2% West schools, 16.8% Northeast, 25% Midwest, 35%	Survey with questions on policies and practices related to nutrition, PA and other elements of school health and	Schools; community garden	**X**	**X**	School administration and teachers indicated the prevalence of gardens increased steadily from 11.9%

	prevalence of U.S. elementary school gardens, but disparities reduce opportunities for disadvantaged students. *J Sch Health.* 2016;86(12):906-912.	South. 31.6% Urban/City, 31.6% suburbs, 11% town, 25.7% rural, 27.9% Lower eligibility (≤33% eligible for reduced priced meals), 37.1% Middle eligibility (>33% to ≤66% eligible), 35% Higher eligibility (>66% eligible); 45.2% (≥66%) White Non-Latino, 54.8% majority non-White, or majority Latino	school wellness: "*Does your school currently incorporate any locally-produced food (eg, fruits, vegetables, meat, dairy) into the meals offered at school (through, for example, a "farm-to-cafeteria," "farm-to-school," or other program?")*", "*Does your school participate in the USDA-sponsored Team Nutrition program?*", and "*At present, is formal classroom instruction offered to elementary students in your school on nutrition education?*"			in 2006-2007 to 31.2% in 2013-2014 (p<.001). In multivariate logistic regressions the prevalence of garden programs varied significantly by school characteristics. Gardens were more prevalent in the west than in other regions. Gardens were less prevalent at schools serving higher proportions of lower-income students and were more prevalent at urban schools than in suburbs, towns, or rural areas.
Valdez et al., 2012	Valdez Z, Dean WR, Sharkey JR. Mobile and home-based vendors' contributions to the retail food environment in rural South Texas Mexican-origin settlements. *Appetite.* 2012;59(2):212-217.	23 vendors (13 mobile food, 10 home based). 12 out of 13, or 92% were men and 20% women. 38.5% had less than high school, 38.5% had some high school, 23.1% were high school graduate, 8 out of 10 or 80% of home based were women and 7.7% men. 70% had less than high school, 10% had some high school, 20% were high school graduate.	Survey to assess the relationship between home and neighborhood environment and children's dietary intake. Survey included demographics (gender, date of birth, education, residence, and employment status), characteristics of the business and work (length of time in business, initial investment, marketing area, percentage of household income from vending, hours of vending, food products sold by season, advertising, source of food products, scheduling strategy, and target customer), working conditions (influence of adverse weather, holidays, and need for repairs), and perceived relationships with customers in the *colonias* (importance to customers, knowledge of customers, participate in solving community problems,	Food retail	**X**	Around 30% of vendors offer healthier food, most offered less healthy options. All vendors sold ice pops. Items typically offered were taqueria foods, elutes, hot dogs, fruits and vegetables, salty/fried snack varieties, sweets, and frozen treats like ice pops. 30% of mobile food vendors sold hot or prepared foods while 50% of home-based vendors sold hot or prepared foods. 30% of mobile food vendors sold fruits and vegetables, while 30% of home-based vendors sold fruits and vegetables. 30% of mobile food vendors sold salty or fried snacks and 70% of home-based vendors sold salty or fried snacks. 23.1% of mobile vendors sold sweet snacks, while 50% of home-based vendors sold sweet snacks. 100% of mobile food vendors

			connected with customers, and trust).				sold frozen snacks, while 50% of home-based vendors sold frozen snacks. 7.7% of mobile vendors sold sugar-sweetened beverages, while 70% of home-based owners sold sugar-sweetened beverages. Mobile vendors did not sell bottled water of juice, while 30% and 20% of home-based vendors sold bottled water and juice.
Wallace et al., 2019	Wallace HS, Franck KL, Sweet CL. Community coalitions for change and the policy, systems, and environment model: A community-based participatory approach to addressing obesity in rural Tennessee. *Prev Chronic Dis.* 2019;16.	1,844 adults, children, and adolescents; 27% of households live below the federal poverty level; the median annual income is $34,563; the 4 counties are predominately non-Hispanic white.	During the first year, FCS evaluation staff members completed a comprehensive situational analysis for each county to identify community needs and strengths. the evaluation team collected input from community members through surveys and focus groups and worked with county FCS agents and C3 program assistants to complete assessments of parks and retail food venues. The evaluation team used the PA Resource Assessment. In years 2 through 4, the lead evaluation specialist reviewed data from surveys, interviews, focus groups, audits, and pedometer monitoring in both process and outcome evaluation activities.	Community gardens; food retail; recreational facilities; parks		**X**	**X**	Almost one-third of respondents indicated that in-store healthy food promotions encouraged them to choose healthier options. During year 1, coalition members discussed a need to return to long-held traditions of collective community engagement and action to address rural obesity rates. In response, C3 established 25 community gardens and supported 10 existing gardens, resulting in 8,300 community members who received garden produce. Sites began with an average number of 11 PA resources, which increased by year 3 to an average of 13 resources as a result of C3 activities. Overall, 61% (248 of 405) of survey respondents participating in direct education programs reported being more physically active as a result of participating in the programs, 59% (117 of 199) reported eating more fruit, and 66% (131 of 199) reported eating more vegetables.

Wilcox et al., 2000	Wilcox S, Castro C, King AC, Housemann R, Brownson RC. Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. *J Epidemiol Community Health.* 2000;54(9):667-672.	1242 women in urban areas: 228 (20.9%) < high school, 312 (28%) high school graduate, 270 (24%) some college, technical, 283 (25.9%) college graduate; 362 (33%) White, 361 (32.9%) African American, 336 (30.7%) Hispanic, 37 (3.4%) American Indian/ Alaskan Native. 1242 women in rural areas: 394 (31.8%) < high school, 416 (33.5%) high school graduate, 229 (18.5%) some college/technical, 201 (16.2%) college graduate. 37 (19.1%) White, 277 (22.3%) African American, 111 (8.9%) Hispanic, 617 (49.9%) American Indian/ Alaskan Native.	Survey based on the Behavioral Risk Factor Surveillance Survey (BRFSS) that included questions about leisure time PA and determinants of leisure time PA, Participants were asked if they engaged in any of a number of aerobic activities in the past two weeks, and if so, they were asked the number of sessions, minutes per session, and perception of increase in heart rate or breathing they experienced from the activity. Survey contained questions about the presence or absence of environmental factors known to impact PA: sidewalks, heavy traffic, hills, streetlights, unattended dogs, enjoyable scenery, others exercising frequently, crime, and access to walking trails, swimming pools, recreational centers, and bike paths.	Recreation facilities, streets		**X**	Rural women reported a more frequent number of environmental barriers to leisure time PA. Rural women were less likely to report the presence of environmental characteristics like sidewalks, streetlights, and access to exercise facilities
Wilcox et al., 2003	Wilcox S, Bopp M, Oberrecht L, Kammermann SK, McElmurray CT. Psychosocial and perceived environmental correlates of physical activity in	Mean years of education 12.9 (SD 3.1) for African Americans. Mean years of education 12.5 (SD 3).	Questions pertaining to perceived physical environment, where participants reported whether they lived within walking distance of a park and whether they had sidewalks in their immediate neighborhood. Open ended question for perceived	Streets; recreational facilities		**X**	In bivariate associations, education, marital status, self-efficacy, greater pros than cons, perceived stress, social support, and perceived neighborhood safety were positively associated with PA; age, depressive symptoms, perceived sidewalks, health

	rural and older African American and white women. *J Gerontol B Psychol Sci Soc Sci.* 2003;58(6):P329-337.		barriers and motivators: "*What gets in your way of exercising or exercising more?" "What would motivate you to exercise or exercise more?"* and "*What are the risks of exercising for older women, if any?"*				care provider discussion of PA, and perceived traffic were negatively associated with PA. In a hierarchical regression analysis, the sociodemographic (R(2) = 23%), psychological (IR(2) = 9%), social (IR(2) = 6%), and perceived physical environmental (IR(2) = 9%) sets of variables were significant (p <.05) predictors of PA (model R(2) = 47%). In response to open-ended questions, most women cited individual and social factors as PA barriers and motivators; falls, injuries, and heart attacks were identified most often as risks.
Wilcox et al., 2005	Wilcox S, Oberrecht L, Bopp M, Kammermann SK, McElmurray CT. A qualitative study of exercise in older African American and white women in rural South Carolina: perceptions, barriers, and motivations. *J Women Aging.* 2005;17(1-2):37-53.	39 women, the mean education level was 12.5 2.4, (n = 16) African American, (n = 23) White)	Focus groups that covered perception about current PA recommendations, perceived benefits of aerobic exercises (physical and mental health benefits, weight and appearance), perceived risk of aerobic exercise (overdoing, injuries), personal, social, cultural and environmental barriers of aerobic exercise, personal, social and environmental enablers for exercise.	Streets, recreation facilities		**X**	Participants explicitly tied many of these barriers to rurality, including lack of transportation, no sidewalks, lack of safety, stray dogs, and lack of facilities or places for exercise. These themes were cited in at least two of the three African American and white groups, and there was a great deal of consensus. Other barriers: too much traffic and crime. Suggested enabling environmental factors included better transportation and more low cost or free facilities or programs geared toward older adults.
Wilcox et al., 2018*	Wilcox S, Saunders RP, Kaczynski AT, et al. Faith, activity, and nutrition randomized dissemination and implementation study: Countywide	55 adopting (92.7%) (n=51) African American Black, (5.5 %) (n=3) Caucasian, 1.8% (n=1) multiracial.	Community health advisors called each church monthly over the 12-month intervention to deliver technical assistance using a semi-structured call script, with church FAN coordinators receiving up to eight calls and pastors up to	Churches	**X**	**X**	Church adoption was 42% (55/132). Estimated reach was 3,527, representing 42% of regular church attendees and 15% of county residents. Intervention church attendees reported greater church-level PA opportunities, PA and HE

	adoption, reach, and effectiveness. *Am J Prev Med.* 2018;54(6):776-785.	77 non adopting (50.7%) (n=39) African American Black, (46.8%) n=36 Caucasian, (2.6%) n=2 multiracial.	four. Faith, Activity, and Nutrition (FAN) Dissemination and Implementation; effectiveness questions include: "*How often, since December 1, 2015 (i.e., after early intervention trainings), there were opportunities for PA (four items) and FV (two items) before, during, or after church events; PA (five items) and HE (four items) messages; and support from the pastor for PA (two items) and HE (one item) (i.e., including PA and HE messages during church services and talking about wearing pedometer)?*"			messages, and PA and HE pastor support (p<0.0001), but not FV opportunities (p=0.07). PA self-efficacy (p=0.07) and FV self-efficacy (p=0.21) were not significantly higher in attendees of intervention versus control churches. The proportion of inactive attendees was lower in intervention versus control churches (p=0.02). The proportion meeting FV (p=0.27) and PA guidelines (p=0.32) did not differ by group.
Wilson et al., 2004	Wilson DK, Kirtland KA, Ainsworth BE, Addy CL. Socioeconomic status and perceptions of access and safety for physical activity. *Ann Behav Med.* 2004;28(1):20-28.	N = 1,194, 42.7% of Male in low Socio-Economic Status, 57.3% of female; 44.3% of male in high SES and 55.7% of Female. < high school was 18.8% in low SES and 9.8% in high SES, high school graduate was 36.6% in low SES, 30.1% in high SES, some college was 31.1% low SES and 32.4% in high SES, college graduate was 13.5% in low SES and 27.7% high SES. African American was 66.5% in low SES and 26.1% in high SES, White 33.5%	Residents of a U.S. southeastern county were contacted using a random-digit-dial method and asked about neighborhood and community environmental supports for PA. A Geographic Information System (GIS) was used to identify trails, sidewalks, public recreation facilities, and violent crime incidents. Survey included a Behavioral Risk Factor Surveillance System (BRFSS) PA module, which included the questions about if they walked for at least 10 min at a time for recreation, exercise, transportation, or while at work.	Recreation facilities; streets; trails	**X**	Respondents from low-SES (vs. high-SES) areas reported higher perceptions of unpleasantness of neighborhoods, unattended dogs, neighborhood crime, and untrustworthy neighbors. Respondents from low-SES areas also reported lower perceptions of access to public recreation facilities but higher perceptions of access to sidewalks in their neighborhoods than those from high-SES areas. Respondents from low-SES areas reported having lower perceptions of having access to waterways and public facilities for PA than respondents from high-SES areas. Higher perceptions of having and using walking/bicycling trails were significantly associated with meeting recommendations for PA among low-SES

		in low SES and 73.9% high SES.					respondents but not for high-SES respondents.
Yousefian et al., 2010	Yousefian A, Hennessy E, Umstattd MR, et al. Development of the rural active living assessment tools: Measuring rural environments. *Prev Med.* 2010;50:S86-S92.	118 street segments, mean number of segment audited: 17	Case studies included townscape audits, youth focus groups, and key informant interviews in each of the three communities. Questions about the town: "*Have any "Walk to School" programs? Participate in the "Safe Routes to School" program?*" Questions about public schools: "*Offer any PA initiatives for students? Allow public access to their recreation facilities after school hours? Have a late bus option for children to stay after school?*" Community based questions: "*Offer local public transportation options, such as public buses or vans? Regularly clear snow from sidewalks? Require bikeways or pedestrian walkways in new public infrastructure projects? Have a public recreation department that offers PA programming? If yes: Do they offer programming for local youth? What age range is serviced by these programs? Do they offer programming for local adults? What age range is served by these programs? Are PA resources/facilities available for local resident use outside of programming? Does the recreation department provide scholarships or offer a sliding fee scale for lower-income residents?*"	Schools		**X**	The Rural Active Living Assessment (RALA) Tools were developed using an evidence-informed framework and substantial input from rural residents, and were designed to balance the needs of practitioners (e.g., user-friendliness) and researchers (e.g., reliable measures). The modules capture specific physical activity amenities, programs and policies, and built environment features. Many of the characteristics of urban and suburban communities shown to be associated with PA: aesthetics, safety from traffic, and destinations are included in the Street Segment Assessment (SSA), but are modified to reflect what is most applicable to rural settings. Certain features (e.g., sidewalk width and material) were excluded, as they were not supported by formative work and the amount of time required to record that level of detail was not justifiable.
Yousefian et al., 2011	Yousefian A, Leighton A, Fox K, Hartley D.	6 rural low-income Maine communities. 48	Townscape audits, youth focus groups, and key informant interviews, including questions	Food retail	**X**		Cost, travel distance, and food quality were identified as factors that influence rural

	Understanding the rural food environment - perspectives of low-income parents. *Rural Remote Health.* 2011;11(2).	participants; 80% female, 20% male; nearly all were Caucasian.	about food shopping habits, barriers to get foods, and parents' perspectives about healthy foods; questions include: "*Where do you go to get food for your family? What problems, if any, do you face when trying to buy foods for your family? How far away are you willing to travel to buy food? How often do you travel these distances to buy food? Where else do you shop for foods other than supermarkets or grocery store? Are there places you go for food in the summer/ fall months vs. the winter months? Describe the quality and variety of the foods available at the places you shop. How does food quality affect what you buy? How do you decide what foods to buy for you and your family? When people talk about 'healthy foods', what does that mean to you? Is there anything else you would like to share about food in your community or your family's food choices?"*			low-income family's efforts to get food. Grocery shopping was often supplemented with food that is harvested, hunted, and bartered. The use of large freezers for storing bulk items was reported as necessary for survival in 'tough' times. Families often travel up to 80 miles to purchase good quality, affordable food, recognizing that in rural communities travelling these distances is a reality of rural life. Parents appeared to know what qualities describe 'healthy food'.
Zimmermann et al., 2016	Zimmermann K, Carnahan LR, Peacock NR. Age-associated perceptions of physical activity facilitators and barriers among women in rural southernmost Illinois. *Prev Chronic Dis.* 2016;13.	110 women, (28%) 31 African American, 77 (70%) noon Hispanic White, 2 (2%) Hispanic White,	14 focus groups across the 7 counties containing at least 3 groups of each age group discussed individual factors, social environment factors, and physical environment factors related to engaging in PA.	Natural environments ; parks; recreation facilities; trails	**X**	Young women viewed attractive natural environment along with availability of parks and trails as facilitators for PA for themselves and their children. Some aspects of the natural environment like weather conditions, mosquitos, and topography were viewed as barriers. Some viewed accessible gymnasiums and community PA classes as a positive influence, but most saw them as unavailable, unaffordable, or inaccessible

		based on hours of operation, cost, or distance from the home.