



**2020**



**NOPREN**  
Nutrition & Obesity  
POLICY RESEARCH & EVALUATION NETWORK

**SPECIAL COLLECTION**

# About the 2020 NOPREN Special Collection

The NOPREN Special Collection features peer-reviewed publications authored by NOPREN members in 2020. This curated collection showcases the impact of NOPREN's collaborative research and evaluation activities and spotlights the many ways in which NOPREN researchers have partnered to improve the nation's nutrition policy research capacity and brought about awareness of policies and practices that work to catalyze national, state and local actions. Included in the collection are articles on early childhood and breastfeeding, drinking water access, healthy food retail, federal nutrition assistance programs (including school meals, SNAP, and WIC), and the effects of the pandemic on food and nutrition security.

## Article Key Words

***COVID-19 Food & Nutrition***



***Drinking Water & Healthy Beverages***



***Early Childhood***



***Food Security***



***Healthy Food Retail***



***Rural Food Access***



***School Wellness***



# Articles

## 1. ALIGNMENT OF STATE REGULATIONS WITH BREASTFEEDING AND BEVERAGE BEST PRACTICES FOR CHILDCARE CENTERS AND FAMILY CHILDCARE HOMES, UNITED STATES

Lee, D. L., Traseira, R., Navarro, S., Frost, N., Benjamin-Neelon, S. E., Cradock, A. L., Hecht, K., & Ritchie, L. D. (2020). Alignment of state regulations with breastfeeding and beverage best practices for childcare centers and family childcare homes, United States. *Public Health Reports, 136*(1), 79–87. <https://doi.org/10.1177/0033354920964156>

### Abstract:

**Objectives:** Childcare is an important setting for nutrition; nearly half of young children in the United States participate in licensed childcare, where they consume up to two-thirds of their daily dietary intake. We compared state regulations for childcare with best practices to support breastfeeding and healthy beverage provision.

**Methods:** We reviewed regulations for childcare centers (centers) and family childcare homes (homes) in effect May-July 2016 and rated all 50 states for inclusion (1 = not included, 2 = partially included, 3 = fully included) of 12 breastfeeding and beverage best practices. We calculated average ratings for 6 practices specific to infants aged 0-11 months, 6 practices specific to children aged 1-6 years, and all 12 practices, by state and across all states. We assessed significant differences between centers and homes for each best practice by using McNemar-Bowker tests for symmetry, and we assessed differences across states by using paired student t tests.

**Results:** States included best practices in regulations for centers more often than for homes. Average ratings (standard deviations) in regulations across all states were significantly higher in centers than in homes for infant best practices (2.1 [0.5] vs 1.8 [0.5],  $P < .001$ ), child best practices (2.1 [0.6] vs 1.8 [0.6],  $P = .002$ ), and all 12 best practices combined (2.1 [0.5] vs 1.8 [0.6],  $P < .001$ ).

**Conclusions:** Although best practices were more consistently included in regulations for centers than for homes, many state childcare regulations did not include best practices to support breastfeeding and the provision of healthy beverages. Findings can be used to inform efforts to improve regulations and to reduce differences between centers and homes.



## 2. A MODEL DEPICTING THE RETAIL FOOD ENVIRONMENT AND CUSTOMER INTERACTIONS: COMPONENTS, OUTCOMES, AND FUTURE DIRECTIONS

Winkler, M. R., Zenk, S. N., Baquero, B., Steeves, E. A., Fleischhacker, S. E., Gittelsohn, J., Leone, L. A., & Racine, E. F. (2020). A model depicting the retail food environment and customer interactions: Components, outcomes, and future directions. *International Journal of Environmental Research and Public Health, 17*(20), 7591. <https://doi.org/10.3390/ijerph17207591>

### Abstract:

The retail food environment (RFE) has important implications for dietary intake and health, and dramatic changes in RFEs have been observed over the past few decades and years. Prior conceptual models of the RFE and its relationships with health and behavior have played an important role in guiding research; yet, the convergence of RFE changes and scientific advances in the field suggest the time is ripe to revisit this conceptualization. In this paper, we propose the Retail Food Environment and Customer Interaction Model to convey the evolving variety of factors and relationships that convene to influence food choice at the point of purchase. The model details specific components of the RFE, including business approaches, actors, sources, and the customer retail experience; describes individual, interpersonal, and household characteristics that affect customer purchasing; highlights the macro-level contexts (e.g., communities and nations) in which the RFE and customers behave; and addresses the wide-ranging outcomes produced by RFEs and customers, including: population health, food security, food justice, environmental sustainability, and business sustainability. We believe the proposed conceptualization helps to (1) provide broad implications for future research and (2) further highlight the need for transdisciplinary collaborations to ultimately improve a range of critical population outcomes.



### 3. CORRELATES OF INFREQUENT PLAIN WATER INTAKE AMONG US HIGH SCHOOL STUDENTS: NATIONAL YOUTH RISK BEHAVIOR SURVEY, 2017

Park, S., Onufrak, S., Craddock, A., Patel, A., Hecht, C., Merlo, C., & Blanck, H. M. (2020). Correlates of infrequent plain water intake among US high school students: National youth risk behavior survey, 2017. *American Journal of Health Promotion, 34*(5), 549–554. <https://doi.org/10.1177/0890117120911885>

#### Abstract:

**Purpose:** To examine factors associated with frequency of plain water (ie, tap, bottled, and unflavored sparkling water) intake among US high school students.

**Design:** Quantitative, cross-sectional study.

**Setting:** The 2017 national Youth Risk Behavior Survey data.

**Subjects:** US high school students with plain water intake data (N = 10 698).

**Measures:** The outcome was plain water intake. Exposure variables were demographics, academic grades, and behavioral characteristics.

**Analysis:** We used logistic regression to estimate adjusted odds ratios (aOR) and 95% confidence intervals (CIs) for factors associated with infrequent plain water intake (<3 vs ≥3 times/day).

**Results:** Overall, 48.7% of high school students reported drinking plain water <3 times/day. Factors associated with infrequent plain water intake were younger age (≤15 years; aOR = 1.20, CI = 1.05-1.37); earning mostly D/F grades (aOR = 1.37, CI = 1.07-1.77); consuming regular soda 1 to 6 times/week (aOR = 1.92, CI = 1.67-2.20) or ≥1 time/day (aOR = 3.23, CI = 2.65-3.94), sports drinks 1 to 6 times/week (aOR = 1.30, CI = 1.14-1.49), milk <2 glasses/day (aOR = 1.51, CI = 1.31-1.73), fruits <2 times/day (aOR = 1.92, CI = 1.66-2.22), and vegetables <3 times/day (aOR = 2.42, CI = 2.04-2.89); and being physically active ≥60 minutes/day on <5 days/week (aOR = 1.83, CI = 1.60-2.08). Students with obesity were less likely to have infrequent water intake (aOR = 0.63, CI = 0.53-0.74).

**Conclusions:** Infrequent plain water intake was associated with younger age, poor academic grades, poor dietary behaviors, and physical inactivity. These findings can inform intervention efforts to increase water intake to promote healthy lifestyles among adolescents.



### 4. EXAMINING COMMONLY USED PERCEIVED AND OBJECTIVE MEASURES OF FRUIT AND VEGETABLE ACCESS IN LOW-INCOME POPULATIONS AND THEIR ASSOCIATION WITH CONSUMPTION

Haynes-Maslow, L., McGuirt, J., Trippichio, G., Armstrong-Brown, J., S Ammerman, A., & A Leone, L. (2020). Examining commonly used perceived and objective measures of fruit and vegetable access in low-income populations and their association with consumption. *Translational Behavioral Medicine, 10*(6), 1342–1349. <https://doi.org/https://doi.org/10.1093/tbm/ibaa077>

#### Abstract:

Perception-based and objective food access measures are often examined as factors influencing individuals' shopping decisions and dietary habits, but the relative influence of these two factors on behaviors needs further examination. This study sought to (a) determine if perception-based and objective measures of fruit and vegetable (F&V) access were related and (b) examine perception-based and objective access measures as predictors of F&V consumption. Participants were recruited as part of a larger intervention study from 12 sites across three urban North Carolina counties. Perception-based food access measured included self-reported perceptions of convenience, variety, and quality of F&V within a neighborhood. Food outlet density was used as the objective measure. This was derived by summing the total number of geocoded convenience stores, grocery stores, supermarkets, and supercenters located within 1 road network mile of participants' home address. Associations between perception-based and objective measures were examined using Pearson's correlations, and associations of F&V access and intake were examined using linear regression models. Pearson correlations between perception-based and objective measures revealed that F&V variety was associated with supermarkets. Regression results show that perception-based barriers to F&V access were not significantly associated with intake, but supercenter density within 1 mile was significantly associated with decreased F&V intake. Common measures of perception-based and objective measures of food access may not be the best predictor of F&V intake. Understanding the relationships of these factors for lower-income populations can offer guidance for future policies and programs.



## 5. EXAMINING RURAL FOOD INSECURE FAMILIES' PERCEPTIONS OF THE SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM: A QUALITATIVE STUDY

Haynes-Maslow, L., Hardison-Moody, A., Patton-Lopez, M., Prewitt, T. E., Byker Shanks, C., Andress, L., Osborne, I., & Jilcott Pitts, S. (2020). Examining rural food-insecure families' perceptions of the supplemental nutrition assistance program: A qualitative study. *International Journal of Environmental Research and Public Health*, 17(17), 6390. <https://doi.org/10.3390/ijerph17176390>

### Abstract:

The Supplemental Nutrition Assistance Program (SNAP) is a critical program that helps reduce the risk of food insecurity, yet little is known about how SNAP addresses the needs of rural, food-insecure residents in the United States (U.S.). This study examines how rural, food-insecure residents perceive SNAP. Semi-structured interviews were conducted with 153 individuals living in six diverse rural regions of Arkansas, Montana, North Carolina, Oregon, Texas, and West Virginia. SNAP was described as a crucial stop-gap program, keeping families from experiencing persistent food insecurity, making food dollars stretch when the family budget is tight, and helping them purchase healthier foods. For many rural residents interviewed, SNAP was viewed in a largely positive light. In efforts to continue improving SNAP, particularly in light of its relevance during and post-coronavirus (COVID-19) pandemic, policymakers must be aware of rural families' perceptions of SNAP. Specific improvements may include increased transparency regarding funding formulas, budgeting and nutrition education for recipients, effective training to improve customer service, connections among social service agencies within a community, and increased availability of automation to streamline application processes.

## 6. FEEDING STUDENTS DURING COVID-19-RELATED SCHOOL CLOSURES: A NATIONWIDE ASSESSMENT OF INITIAL RESPONSES

McLoughlin, G. M., Fleischhacker, S., Hecht, A. A., McGuirt, J., Vega, C., Read, M., Colón-Ramos, U., & Dunn, C. G. (2020). Feeding students during COVID-19-related school closures: A nationwide assessment of initial responses. *Journal of Nutrition Education and Behavior*, 52(12), 1120–1130. <https://doi.org/10.1016/j.jneb.2020.09.018>

### Abstract:

**Objective:** To conduct a nationwide assessment of child nutrition administrative agencies' responses to meal service provision during coronavirus disease 2019-related school closures.

**Design:** Systematic coding of government websites (February-May 2020) regarding school meal provision in all 50 US states and the District of Columbia, 5 US territories, and the US Department of Interior Bureau of Indian Education.

**Participants:** All US jurisdictions (N = 57).

**Variables measured:** Seven coding criteria were established to assess the strengths and weaknesses of jurisdictions' responses derived from emergency declarations, school closure announcements, and government websites on emergency school meals.

**Analysis:** Descriptive analyses.

**Results:** Most jurisdictions mentioned school meal provisions in school closure announcements (76.4%), provided easily interpretable information and/or maps about meal sites (57.9%), and included detailed information about school meal provisions in their coronavirus disease 2019 landing webpages (n = 26, 51%). Fewer provided updated and comprehensive implementation guidance (39.3%), referenced school closures in emergency declarations (37.5%), had clear communication/outreach to families (21.4%), or partnered with antihunger organizations (11.6%).

**Conclusions and implications:** Understanding initial jurisdictions' approaches are critical to current and future emergency planning during school closures and reopening to help address food insecurity better, limit disease transmission, and prevent health disparities, particularly among at-risk populations.



## 7. HEALTHY DEFAULT BEVERAGES IN KIDS' MEALS: EVALUATING POLICY ADHERENCE AND IMPACT IN CALIFORNIA

Tsai, M., Harpainter, P., Martin, A., Woodward-Lopez, G., Lee, D., & Ritchie, L. (2020). Healthy default beverages in kids' meals: Evaluating policy adherence and impact in California. *Current Developments in Nutrition*, 4(Supplement\_2), 730–730. [https://doi.org/10.1093/cdn/nzaa051\\_027](https://doi.org/10.1093/cdn/nzaa051_027)

### Abstract:

**Objectives:** Healthy default beverage policies for restaurant kids' meals have been identified as a top strategy to improve beverage intake in young children and reduce obesity and diabetes risk. California passed a statewide policy (SB1192), effective January 2019, specifying kids' meal default beverages as water, unflavored milk, or a nondairy alternative. Although other localities have adopted similar policies, there have been no studies on their effectiveness. The aim of this study was to assess changes in beverages offered with kids' meals before and after a healthy default beverage policy took effect and to quantify policy adherence in menus and cashier orders in quick service restaurants (QSR).

**Methods:** The study employed a pre-post policy design. Baseline data on beverages offered as part of kids' meals were collected from 111 QSR in low-income areas in California in late 2018, prior to policy implementation. Follow-up data were collected from the same restaurants one year later. Data were collected by menu observation and purchase of kids' meals. Both walk-in and drive-through settings were assessed where available. Full policy adherence was defined as offering only SB1192-compliant beverages, and was assessed 3 ways: menu board, cashier order, and a combined metric.

**Results:** At baseline, prior to any legislative requirement, 6 (6.3%) restaurant menu boards, 5 (4.5%) cashier orders, and 0 restaurants overall were already fully adherent. At follow-up, 64 (66.0%) restaurant menu boards, 1 (0.9%) cashier order, and 0 restaurants overall were fully adherent. Generalized estimating equations, clustered by restaurant chain, were used to test pre-post policy changes. Adherence in menu boards increased (59.7%,  $p < .0001$ ). There were no changes in adherence in cashier orders or overall adherence.

**Conclusions:** California's healthy default beverage policy for restaurant kids' meals was effective in changing QSR menu board offerings but did not impact cashier order processes. Additional staff training may improve policy implementation. Studies are underway to assess the impact of staff training and customer behavior change.



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## 8. HEALTHY FOOD RETAIL DURING THE COVID-19 PANDEMIC: CHALLENGES AND FUTURE DIRECTIONS

Leone, L. A., Fleischhacker, S., Anderson-Steeves, B., Harper, K., Winkler, M., Racine, E., Baquero, B., & Gittelsohn, J. (2020). Healthy food retail during the COVID-19 pandemic: Challenges and future directions. *International Journal of Environmental Research and Public Health*, 17(20), 7397. <https://doi.org/10.3390/ijerph17207397>

### Abstract:

Disparities in dietary behaviors have been directly linked to the food environment, including access to retail food outlets. The Coronavirus Disease of 2019 (COVID-19) pandemic has led to major changes in the distribution, sale, purchase, preparation, and consumption of food in the United States (US). This paper reflects on those changes and provides recommendations for research to understand the impact of the pandemic on the retail food environment (RFE) and consumer behavior. Using the Retail Food Environment and Customer Interaction Model, we describe the impact of COVID-19 in four key areas: (1) community, state, tribal, and federal policy; (2) retail actors, business models, and sources; (3) customer experiences; and (4) dietary intake. We discuss how previously existing vulnerabilities and inequalities based on race, ethnicity, class, and geographic location were worsened by the pandemic. We recommend approaches for building a more just and equitable RFE, including understanding the impacts of changing shopping behaviors and adaptations to federal nutrition assistance as well as how small food business can be made more sustainable. By better understanding the RFE adaptations that have characterized the COVID-19 pandemic, we hope to gain greater insight into how our food system can become more resilient in the future.



## 9. LEVERAGING INFORMAL COMMUNITY FOOD SYSTEMS TO ADDRESS FOOD SECURITY DURING COVID-19

Haynes-Maslow, L., Hardison-Moody, A., & Byker Shanks, C. (2020). Leveraging informal community food systems to address food security during COVID-19. *Journal of Agriculture, Food Systems, and Community Development*, 10(1), 197–200. <https://doi.org/10.5304/jafscd.2020.101.005>

### Abstract:

The novel coronavirus (COVID-19) has dramatically reshaped the U.S. food system and how people interact with it—more specifically, how people interact with their community food environment. The food environment is the distribution of food sources within a community, including the number, type, location, and accessibility of retail food outlets (Glanz, Sallis, Saelens, & Frank, 2005). Systemic injustices shape our food system and lead to a lack of access to healthier food and beverages for low-income and communities of color (Baker, Schootman, Barnidge, & Kelly, 2006; Bower, Thorpe, Rohde, & Gaskin, 2014). These neighborhood disparities have concrete effects on health, including increasing people’s risk for obesity, type 2 diabetes, heart disease, and stroke (Franco, Diez Roux, Glass, Caballero, & Brancati, 2008; Richardson, Boone-Heinonen, Popkin, & Gordon-Larsen, 2012). COVID-19 exacerbates these long-standing disparities, disproportionately affecting low-income people and communities of color. Brutal structural inequalities have resulted in Black and Latinx Americans being 2.7 and 3.1, respectively, times more likely to be diagnosed with COVID-19 (Moore et al., 2020)

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## 10. THE EARLY FOOD INSECURITY IMPACTS OF COVID-19

Niles, M. T., Bertmann, F., Belarmino, E. H., Wentworth, T., Biehl, E., & Neff, R. (2020). The early food insecurity impacts of COVID-19. *Nutrients*, 12(7), 2096. <https://doi.org/10.3390/nu12072096>

### Abstract:

COVID-19 has disrupted food access and impacted food insecurity, which is associated with numerous adverse individual and public health outcomes. To assess these challenges and understand their impact on food security, we conducted a statewide population-level survey using a convenience sample in Vermont from 29 March to 12 April 2020, during the beginning of a statewide stay-at-home order. We utilized the United States Department of Agriculture six-item validated food security module to measure food insecurity before COVID-19 and since COVID-19. We assessed food insecurity prevalence and reported food access challenges, coping strategies, and perceived helpful interventions among food secure, consistently food insecure (pre-and post-COVID-19), and newly food insecure (post COVID-19) respondents. Among 3219 respondents, there was nearly a one-third increase (32.3%) in household food insecurity since COVID-19 ( $p < 0.001$ ), with 35.5% of food insecure households classified as newly food insecure. Respondents experiencing a job loss were at higher odds of experiencing food insecurity (OR 3.06; 95% CI, 2.114–0.46). We report multiple physical and economic barriers, as well as concerns related to food access during COVID-19. Respondents experiencing household food insecurity had higher odds of facing access challenges and utilizing coping strategies, including two-thirds of households eating less since COVID-19 ( $p < 0.001$ ). Significant differences in coping strategies were documented between respondents in newly food insecure vs. consistently insecure households. These findings have important potential impacts on individual health, including mental health and malnutrition, as well as on future healthcare costs. We suggest proactive strategies to address food insecurity during this crisis.



## 11. THE CURATED FOOD SYSTEM: A LIMITING ASPIRATIONAL VISION OF WHAT CONSTITUTES “GOOD” FOOD

Andress, L., Byker Shanks, C., Hardison-Moody, A., Prewitt, T. E., Kinder, P., & Haynes-Maslow, L. (2020). The curated food system: A limiting aspirational vision of what constitutes “good” food. *International Journal of Environmental Research and Public Health*, 17(17), 6157. <https://doi.org/10.3390/ijerph17176157>

### Abstract:

In an effort to elucidate an aspirational vision for the food system and explore whether the characteristics of such a system inadvertently set unattainable standards for low-wealth rural communities, we applied discourse analysis to the following qualitative datasets: (1) interviews with food experts and advocates, (2) scholarly and grey literature, (3) industry websites, and (4) email exchanges between food advocates. The analysis revealed eight aspirational food system discourses: production, distribution, and infrastructure; healthy, organic, local food; behavioral health and education; sustainability; finance and investment; hunger relief; demand-side preferences; romanticized, community led transformations. Study findings reveal that of eight discourses, only three encompass the experiences of low-wealth rural residents. This aspirational food system may aggravate the lack of autonomy and powerlessness already experienced by low-wealth rural groups, perpetuate a sense of failure by groups who will be unable to reach the aspirational food vision, silence discourses that might question those that play a role in the inequitable distribution of income while sanctioning discourses that focus on personal or community solutions, and leave out other policy-based solutions that address issues located within the food system. Further research might explore how to draw attention to silenced discourses on the needs and preferences of low-wealth rural populations to ensure that the policies and programs promoted by food system experts mitigate poor diets caused by food insecurity. Further research is needed to inform policies and programs to mitigate food insecurity in low-wealth rural populations.



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## 12. SCHOOL CLOSURES DURING COVID-19: OPPORTUNITIES FOR INNOVATION IN MEAL SERVICE

Kinsey, E. W., Hecht, A. A., Dunn, C. G., Levi, R., Read, M. A., Smith, C., Niesen, P., Seligman, H. K., & Hager, E. R. (2020). School closures during COVID-19: Opportunities for innovation in meal service. *American Journal of Public Health*, 110(11), 1635–1643. <https://doi.org/10.2105/AJPH.2020.305875>

### Abstract:

In 2019, the National School Lunch Program and School Breakfast Program served approximately 15 million breakfasts and 30 million lunches daily at low or no cost to students. Access to these meals has been disrupted as a result of long-term school closures related to the COVID-19 pandemic, potentially decreasing both student nutrient intake and household food security. By the week of March 23, 2020, all states had mandated statewide school closures as a result of the pandemic, and the number of weekly missed breakfasts and lunches served at school reached a peak of approximately 169.6 million; this weekly estimate remained steady through the final week of April. We highlight strategies that states and school districts are using to replace these missed meals, including a case study from Maryland and the US Department of Agriculture waivers that, in many cases, have introduced flexibility to allow for innovation. Also, we explore lessons learned from the pandemic with the goal of informing and strengthening future school nutrition policies for out-of-school time, such as over the summer.



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