



Published in final edited form as:

J Acad Nutr Diet. 2025 October ; 125(10): 1592–1600. doi:10.1016/j.jand.2025.03.010.

A Natural Experiment to Evaluate Changes in Kids' Meal Beverages in Fast-food Restaurants Following a Healthy Default Policy, 2019–2022

Angie L Cradock, ScD MPE [Principal Research Scientist and Deputy Director],

Harvard Prevention Research Center, Harvard TH Chan School of Public Health 677 Huntington Avenue, 7th floor, Boston, MA 02115.

Jessica L Barrett, MPH [Senior Research Analyst],

Harvard TH Chan School of Public Health, 677 Huntington Avenue, 7th floor, Boston, MA 02115.

Jason P. Block, MD, MPH [General Internal Medicine Physician and Associate Professor],

Population Health, Harvard Medical School, Harvard Pilgrim Health Care Institute, 401 Park Drive, Suite 401, Boston, MA 02215.

Amy A Bolton, BA [Research Assistant],

Harvard TH Chan School of Public Health, 677 Huntington Avenue, 7th floor, Boston, MA 02115.

Carolyn Bresnahan, MPH [Research Associate],

Former affiliation: Johns Hopkins Bloomberg School of Public Health Current affiliation: Lead Research Associate, Food and Nutrition, Westat, 1600 Research Boulevard, Rockville, MD 20850.

Lisa Harnack, DrPH, RD [Professor and Interim Division Head],

Division of Epidemiology & Community Health, School of Public Health, University of Minnesota, 300 West Bank Office Building, Minneapolis, MN 55454.

Stephanie McCulloch, MS, MPH [Research Assistant],

Harvard TH Chan School of Public Health 677 Huntington Avenue, 7th floor, Boston, MA 02115.

Corresponding Author: Angie L. Cradock, ScD MPE, Principal Research Scientist and Deputy Director of the Harvard Prevention Research Center, Harvard TH Chan School of Public Health 677 Huntington Avenue, 7th floor, Boston, MA 02115. acradock@hsph.harvard.edu.

Author Contributions:

Angie L Cradock, Conceptualization, Methodology, Formal Analysis, Resources, Writing-Original Draft, Visualization, Supervision, Funding acquisition.

Jessica L Barrett, Methodology, Formal Analysis, Data Curation, Writing – Review & Editing

Jason Block, Conceptualization, Methodology, Writing – Review & Editing

Amy A Bolton, Methodology, Validation, Formal Analysis, Writing - Reviewing and Editing

Carolyn Bresnahan, Methodology, Investigation, Writing – Review & Editing, Project Administration

Lisa Harnack, Conceptualization, Methodology, Writing – Review & Editing

Stephanie McCulloch, Methodology, Formal Analysis, Data Curation, Writing – Review & Editing

Christina Roberto, Conceptualization, Methodology, Writing – Review & Editing

Kristine Wiant, Methodology, Supervision, Writing – Review & Editing

Alyssa Moran, Conceptualization, Methodology, Investigation, Resources, Writing – Review & Editing, Supervision, Funding Acquisition

Conflicts of Interest Disclosure. The authors declare that they have no conflicts of interest to disclose.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Christina A. Roberto, PhD [Associate Professor, Medical Ethics and Health Policy and Associate Director],

Center for Health Incentives and Behavioral Economics, Perelman School of Medicine, University of Pennsylvania, 423 Guardian Dr., 1121 Blockley Hall, Philadelphia, PA 19103.

Kristine Wiant [Senior Survey Director],

RTI International, 3040 East Cornwallis Road, Research Triangle Park, NC 27709.

Alyssa Moran, ScD, MPH, RD [Assistant Professor]

Johns Hopkins Bloomberg School of Public Health, 624 N. Broadway, Hampton House 363, Baltimore, Maryland, 21205.

Abstract

Background: Jurisdictions have implemented “healthy beverage policies” requiring restaurants to make lower-sugar beverages the default option listed on kids’ menus to improve the nutrition of restaurant offerings for children.

Objective: To compare changes in beverage offerings in kids’ meals written on menu boards within chain restaurants before and after policy implementation in intervention and comparison communities.

Design: Quasi-experimental study with comparison using photo and audit observations at restaurants October 2019-June 2022.

Participants/Setting: Forty-three restaurants in 3 fast-food chains serving kids’ meals with a beverage that did not make lower-sugar beverages the default option at baseline in two intervention communities (New York, NY, Philadelphia, PA) and one comparison community, (Newark, NJ).

Intervention: Policies that require only healthier beverages as default options are written on kids’ meal menus.

Primary Outcome: Beverage options listed in the kids’ meal on the menu board were allowable under healthy beverage policies.

Analysis: Descriptive and repeated measures analysis for difference in primary outcome from baseline to follow-up overall and by policy status.

Results: At follow-up, 39 (91%) locations, including 8 (89%) locations in the comparison area with no healthy default policy, listed only beverages allowable as defaults under healthy beverage policies ($p < 0.001$ vs. baseline, all locations). From baseline to follow-up, two chains changed the beverages listed with the kids’ meal to align with the healthy default policies in all but one location, whereas one chain made no menu changes ($p < 0.001$). No statistically significant differences in menu changes were observed between intervention and comparison areas.

Conclusions: After healthy beverage policies were enacted in two of three communities, most locations in two restaurant chains listed only allowable beverages regardless of location outside of cities where the policies were in place. Regional implementation in response to new local healthy default policies may result in broader accessibility of healthier children’s beverage options.

Keywords

Sugar-sweetened beverage; menu; chain restaurant; children; drinks

Introduction

More than one in three children and adolescents in the United States consume fast food on a given day, and for children aged 2–11, fast food sources comprise more than 11% of daily calories.¹ Eating foods from fast-food and full-service restaurants is associated with poorer diet quality among children, including a higher intake of soda and other sugar-sweetened beverages.^{2,3} While the proportion of the top restaurant chains that include a sugary drink as a default choice in their kids' meals has declined over time, in 2018, almost two-thirds (65.8%) of top chains' kids' meals still included a sugar-sweetened drink.⁴ More than half of restaurant purchases (52%) for children are at top fast-food chain restaurants, and purchases from the kids' menu (vs. regular menus) are twice as likely to include a sugar-sweetened beverage.⁵ Fast food and kids' meals are marketed to children via television, other digital media markets,⁶ and in the stores themselves.⁷ Cross-promotion efforts that tie food and beverage products to popular movies, toys, or cartoon characters have increased.⁷ In 2019, fast-food restaurants spent \$5 billion in advertising,⁸ with only one restaurant chain allocating more than 1% of its ad spending promoting healthier kids' meals.⁸

Efforts to improve the nutrition of restaurant offerings for children have included voluntary adoption of nutrition standards for meals packaged for kids supported by the National Restaurant Industry and adopted by several national brands^{9,10}, mandatory calorie labeling¹¹, restrictions on in-store marketing of kids' menu items that do not meet minimum nutritional standards¹², and policies limiting sugar-sweetened drinks in kids' meals ("healthy beverage policies"). Three-quarters of the 20 healthy beverage policies enacted at the state or local level in the US through 2020 changed the default beverages, the pre-selected beverages that will be provided as part of a kids' meal, unless the customer overrides it, to be a healthier beverage.¹³ The most comprehensive six policies also required a depiction of healthier default beverages on the kids' menu board and in promotional materials.¹³ These default strategies are anticipated to move customers to accept the healthier beverage provided with the meal, in part because not doing so would require an active decision by the customer.¹⁴ Some data suggest that changing the default options in bundled kids' meals on menus might increase the selection of healthy options.^{15,16}

However, it remains unclear what features might be "optimal"¹⁴ in shaping policy approaches that, when implemented, could be used to shift behaviors such as beverage¹⁷ or other menu item purchasing patterns.^{18,19} One study comparing online kids' meal options in communities with and without healthy beverage policies noted that having a limited number of default beverage options allowed by the policy was associated with lower adherence.¹⁷ A study of healthy default beverage policies in California and the city of Wilmington, Delaware, found that the proportion of restaurants with menus displaying healthier beverages offered with kids' meals on menu boards increased post-policy in California but not in Delaware.²⁰ In Illinois, a state healthy beverage policy had

mixed implementation, with limited evidence for changes overall in kids' meal beverage offerings²¹ outside of modifications observed in online kids' menus for select fast-food chains²².

In 2019, New York, NY²³ and Philadelphia, PA²⁴ enacted policies requiring healthier beverages to be the default option in kids' meals, with requirements regarding the types of beverages allowed to be displayed on the kids' menu in fast-food restaurants. The objective of this study was to examine changes in beverage offerings in kids' meals written on menu boards within three chain restaurants before and after healthy beverage policy implementation in New York, NY and Philadelphia, PA (places that passed a healthy beverage policy) compared with restaurants in the Newark, NJ metro area, (the comparison community).

Methods

Context

This paper reports findings from baseline and follow-up policy implementation analyses collected as part of a parent quasi-experimental study to evaluate changes in dietary intake associated with healthy beverage policies implemented in two cities (New York, NY and Philadelphia, PA), with the Newark, NJ metropolitan area used as a comparison community.

Policies

Policies in both cities required that food service establishments offering a children's meal limit the beverages listed with the meal to water (including sparkling or flavored with no added natural or artificial sweeteners), flavored or unflavored nonfat or one percent milk or non-dairy equivalent in limited size (New York: 8 oz or less) or calorie content (Philadelphia: 130 calories or less), or 100% juice with no added natural or artificial sweeteners 8 oz or less (may include water or carbonated water).^{23,24} Both policies allow restaurants to provide substitute beverages upon customer request. The healthy beverage default policies were to be implemented in restaurants by April 2020.

Sample

Restaurant chains were eligible for the study if they were 1) a fast-food restaurant chain within the top 200 revenue-generating US restaurants ranked by Nation's Restaurant News in 2018 or a regional fast-food chain; 2) operating at least two locations (excluding locations inside train stations, airports, or universities) in the Newark, NJ metro area (Bergen, Hudson, Essex, and Union Counties), and either New York, NY, or Philadelphia, PA; 3) offering at least one kids' meal on the menu that includes a beverage; and 4) not already compliant with the new healthy default beverage policies in 2019 (prior to the policy implementation date). Restaurant kids' menu offerings and policy compliance were determined by reviewing restaurants' menus and beverage nutritional information online. Researchers identified four fast-food restaurant chains as eligible. One chain refused to allow data collection.

For each eligible chain, a list of locations in New York, NY, Philadelphia, PA, and the Newark, NJ metropolitan area was compiled using the location finder feature on each

chain's website and web searches in Google Maps and Yelp, resulting in 195 locations (47 in the Newark, NJ metro area; 124 in New York, NY; and 24 in Philadelphia, PA). Restaurant locations in the Newark metro area (the comparison area) were matched to Philadelphia and New York (the intervention areas) locations of the same chain based on population demographics in the locations' zip code associated with sugary drink intake in restaurants^{3,5,25} (i.e., % poverty, % black, % Hispanic, median age, % high school graduates), resulting in 35 matched locations. At baseline, researchers called restaurants to ensure the availability of a kids' meal on the menu board and conducted a screening visit. If a restaurant was deemed unsuitable for data collection during screening visits (e.g., in a private office building, safety concerns, refused data collection), researchers identified a nearby substitute location among those eligible. During screening visits and initial audits, through observation and restaurant manager referral, researchers identified and added 54 additional locations in the eligible chains that were not initially identified via online searches (Figure 1). The locations with completed audits at baseline were eligible to be visited at follow-up if, at baseline, a kids' meal was available, and at least one child per visit was recruited for the primary data collection intercept surveys for the parent quasi-experimental study.

Protocol

Researchers used data collected via a menu board audit instrument adapted from prior studies of kids' meal policy implementation.²⁶ Trained data collectors visited restaurant chains in the three metro areas from October 2019- January 2020 (baseline) and January-June 2022 (follow-up) to collect information about restaurant menu offerings using Qualtrics software. Researchers visited each restaurant location in the sample at least once at each time point. Data collectors completed questions about kids' meal food and beverage offerings listed on the menu and beverages available at fountain stations at the initial visit per time point (baseline and follow-up), and they photographed menu boards and beverage sources at all visits. Two researchers independently coded photos to identify beverages included with kids' meals on the menu board, then coding was compared and discrepancies were resolved by a third researcher. Data from one visit per time point (baseline and follow-up) were used for analysis: reconciled photo coding and in-person audit responses from initial visits (preferred) or photo coding only from the next visit, where audit responses were missing in the initial visit (n=9 at baseline, n=5 at follow-up). The Harvard TH Chan School of Public Health Institutional Review Board determined this study was not human subjects research.

Measures

The primary outcome was whether all beverage options listed with the kids' meal on the menu board are allowable under the kids' meal policy (yes/no). Kids' meals were defined as a combination of two or more items sold at a single price and intended for child consumption (e.g., written on the menu board as kids' menu, children's menu, happy meals, or juniors).²³ Kids' meals were considered to include a beverage if a beverage was bundled with a food item without changing the meal price. Data collectors recorded whether the menu board showed a kids' meal with a beverage based on in-person audit observations.

Beverages listed on the menu board were categorized as “allowable” under healthy beverage policies if they were water, 100% juice (≤ 8 oz), diluted juice (≤ 8 oz), plain nonfat/low-fat milk, and milk substitutes (≤ 8 oz), or flavored nonfat/low-fat milk and milk substitutes (≤ 8 oz). Non-allowable beverages included sugar-sweetened soft drinks and sweetened fruit drinks, energy or sports drinks, sweetened tea, diet beverages, juices not containing 100% juice or of size greater than 8 oz, reduced or full-fat milk, and milk or milk substitutes greater than 8 oz. Beverage types were recorded during audit visits and coded from photos, and reconciled responses were used for analysis.

Analysis: Restaurant locations with audits completed at both baseline and follow-up were included in the analysis (Figure 1). Researchers used descriptive analyses to summarize the characteristics of the restaurants and outcomes at baseline and follow-up. Differences in demographic characteristics of the zip codes where restaurants were located (i.e., matching characteristics) by metro area were examined using t-tests. Researchers examined changes overall from baseline to follow-up and differences in changes by metro area and restaurant chain for the following outcomes: 1) the proportion of locations with the primary outcome (i.e., all beverage options written with the kids’ meal on the menu board are allowable under the kids’ meal policy, yes/no), and 2) the proportion of locations with each type of allowable or non-allowable drink written with the kids’ meal on the menu board. For these binary outcomes (yes/no) overall, McNemar’s exact test was used to examine the difference in proportion at baseline and follow-up when responses varied among locations at baseline (i.e., some “yes,” some “no”). The exact binomial test was used to examine the proportion with the outcome at follow-up when responses did not vary at baseline (i.e., all locations “yes” or all locations “no”). For the binary outcomes (yes/no) by metro area and by chain, repeated measures logistic regression was used to examine the difference in proportion at baseline and follow-up, with a time $\times$ group (metro area or chain) interaction, when responses varied among locations at baseline. Fisher’s exact test was used to examine the proportion with the outcome at follow-up when responses did not differ within a metro area or chain at baseline. Descriptive statistics only (no statistical tests) were reported when sample sizes were too small to estimate statistical tests controlling for metro area or chain. Data were analyzed using SAS version 9.4.²⁷ A statistical significance level of $p < 0.05$ was used.

Results

Among 87 chain restaurant locations visited at baseline, baseline audits were completed at 83 locations, and 46 were visited at follow-up (Figure 1). Data from 43 chain restaurant locations were analyzed at both baseline and follow-up. Table 1 presents these data overall and by metro area, including the number of restaurant locations visited, the chain, the demographic characteristics of the populations in the zip codes of the restaurant locations, and whether the menu board had a kids’ meal with a beverage. More than half of the locations ($n=28$, 65%) belonged to Chain 2, and 24 restaurants (56%) were in New York, NY. Thirty-seven (86%) locations had a menu board with a kids’ meal that included a beverage at baseline, while 6 (14%) did not, despite having one during screening visits. All menus included at least one kids’ meal with a beverage at follow-up.

At baseline, all locations listed at least one beverage on the kids' meal menu that would no longer be allowable as a default option (Table 2). All locations displayed a fountain drink as a default beverage option with the kids' meal, and all had sugar-sweetened drinks available at the fountain. Nearly two-thirds of locations with a menu board showing a kids' meal (62%, n=23) had water (an allowable beverage) available at the fountain along with the non-allowable options. The remaining 14 locations (38% of locations with a menu board showing a kids' meal) had only non-allowable options in service at the fountain. Three (8%) of the restaurants (all from Chain 3, with 2 locations in an intervention community and 1 location in the comparison community) listed one or more beverages allowable under the kids' meal policy, including diluted juice ≤ 8 oz, milk ≤ 8 oz, and flavored milk ≤ 8 oz as options. None listed water or 100% juice ≤ 8 oz as an option.

At follow-up, 39 (91%) locations, including 8 locations in the comparison area with no healthy default policy, listed only beverages allowable as defaults under healthy beverage policies, a statistically significant change from baseline ($p < 0.001$). Changes in menus over time were similar in intervention and comparison areas. No significant differences in menu changes were observed between intervention and comparison areas ($P < 0.05$) from baseline to follow-up. At follow-up, nearly all (98%, n=42) locations listed one or more beverages allowable under the kids' meal policy, including 100% juice (65%), diluted juice ≤ 8 oz (26%), or water (26%). A few (9%, n=4) menus listed a fountain drink as a beverage option for the kids' meal, and all had sugary drinks, diet drinks, and water available at the fountain. Differences from baseline to follow-up were large in the percentage of locations listing one or more beverages allowable under the kids' meal policy (8% to 98%, $p < 0.001$), water (0% to 26%, $p = 0.001$), 100% juice (0% to 65%, $p = 0.047$), diluted juice (8% to 26%, $p = 0.01$), and a fountain drink (100% to 9%, $p < 0.001$).

From baseline to follow-up, Chains 1 and 2 changed the default beverages listed with the kids' meal to align with the healthy default policies in all but one location. In contrast, Chain 3 made no menu changes (Figure 2). Chain 2 listed 100% juice on the menu board with the kids' meal in 100% of locations at follow-up, in place of a fountain drink listed in 100% of locations at baseline. Chain 1 replaced the fountain drink option with water in 92% of locations and diluted juice ≤ 8 oz in 67% of locations, with one location still listing a fountain drink.

Discussion

This study examines changes in beverage offerings in kids' meals written on menu boards within three corporate chain restaurants before and after healthy beverage policy implementation in New York, NY and Philadelphia, PA (places with healthy beverage policies) compared with restaurants in the Newark, NJ metro area, (the comparison). These chains were of interest because they had not voluntarily adopted "healthy beverage policy" practices before baseline data collection. At baseline, all locations listed at least one beverage on the kids' meal menu that would no longer be allowable as a default option. At follow-up, 39 (91%) of all restaurants in this study, including 8 locations in the comparison area of Newark with no healthy default policy, changed their menus to make them compliant with new policy guidelines.

While menu changes overall were similar in intervention and comparison areas, they differed by chain. Two chains made menu product changes in all or most restaurants, regardless of location in a community with a healthy beverage policy. One chain made no menu changes. Similar spillover effects were observed in Wisconsin fast-food chains, a state with no policy, following the passage of a healthy beverage policy in neighboring Illinois.²² At baseline, only one chain offered a beverage option with the kids' meals allowable under a new default beverage policy. Thus, two chains needed to identify new kids' meal beverage products for their menus to comply with these new policies. It is possible that changes observed in these corporate fast-food chain restaurants, regardless of local policy, were due to the size of the markets covered by the new policies studied, a desire to use existing regional product distribution networks or to ensure uniformity across a brand.

An increase in healthier beverage options with kids' meals, particularly as the default, may result in fewer purchases and lower consumption of sugary drinks,²⁸ a key contributor to unhealthy weight gain²⁹ and oral health concerns.³⁰ This potential to lower sugary drink consumption is supported by modeling estimates²⁸ and natural experimental evidence.¹⁵ Following a voluntary change to make the default beverage healthier, almost seven in 10 children accepted the healthier beverage option in kids' meals instead of asking for a substitute at a theme park.¹⁵ However, in practice, healthy beverage default policies have had a mixed impact on what appears on the menu board, suggesting implementation supports may be needed.²⁶ Additionally, platforms for purchasing food from food retail establishments have expanded considerably,³¹ and many healthy default policies have not included specifications for kiosk ordering, online ordering, or delivery platforms.¹³ Some evidence indicates that healthy kids' beverage policies have limited effects on changes in offerings via restaurant websites or third-party sales platforms^{20,22,32} highlighting that they be considered when designing such policies.

Healthy default policies present an opportunity to leverage parent and child receptivity to healthier beverage options and may also nudge adult selections.³³ Four out of five children aged 8–12 years in a 2014 survey indicated they would be receptive to choosing milk, water, or flavored water instead of soda with their meal when eating out.³⁴ Both independent and chain restaurants see the provision and promotion of healthier options as potentially feasible strategies.^{35,36} Still, they may need different assistance and resources to support changes.³⁵ Despite evidence that providing healthier options may be revenue-positive, restaurant leaders report a loss of revenue, limited acceptance of new products, and sourcing challenges as barriers.³⁶ Given studies suggesting that sustained provision of healthier menu options and menu modifications may lead to sustainable, healthier ordering patterns,¹⁶ increasing healthy beverage options by default could benefit kids' nutritional intake.

Limitations

This study was conducted in three restaurant chains in three metro areas in the northeastern US using a natural experimental design. The selection of restaurant chains (not already in compliance with the forthcoming policies) and locations were purposeful to allow comparisons between metro areas with and without a healthy beverage policy within comparable neighborhoods based on demographic characteristics. At baseline, researchers

visited 87 sites and 46 locations at follow-up. These 46 locations visited at follow-up were similar to the 41 locations not included at follow-up in terms of the proportion from each chain and metro area and in the demographic characteristics of the zip code where the restaurants were located (median age, the percentages of the population with a high school education or higher, below poverty level, Black or African American non-Hispanic, and Hispanic or Latino) (Data not shown). However, the findings of this study may not generalize to other geographic or community settings, restaurant types, or chains. Additionally, COVID-19 disruptions in restaurant operations may have impacted policy compliance, technical assistance, and enforcement. Researchers used multiple sources (visual audit and photographs) to measure primary outcomes but could not access areas behind the register or service counter and did not assess the practices of employees, outcomes in non-chain restaurants, or other behavioral outcomes.

Conclusions:

After healthy beverage policies were enacted in two of three communities, most locations in two restaurant chains listed only allowable beverages regardless of location outside of cities where the policies were in place. Regional implementation in response to new local healthy default policies may result in broader accessibility of healthier children's beverage options.

Funding:

This work was supported by a grant from the National Institutes of Health (#5R01HD100983-04) and in part by a grant from the Centers for Disease Control and Prevention (U48DP006376) and a grant from the Bloomberg American Health Initiative. The findings and conclusions are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention or other funders.

References:

1. Fryar CD, Carroll MD, Ahluwalia N, Ogden CL. Fast Food Intake Among Children and Adolescents in the United States, 2015–2018. NCHS Data Brief. Aug 2020;(375):1–8.
2. Bowman SA, Gortmaker SL, Ebbeling CB, Pereira MA, Ludwig DS. Effects of fast-food consumption on energy intake and diet quality among children in a national household survey. *Pediatrics*. Jan 2004;113(1 Pt 1):112–8. [PubMed: 14702458]
3. Powell LM, Nguyen BT. Fast-food and full-service restaurant consumption among children and adolescents: effect on energy, beverage, and nutrient intake. *JAMA pediatrics*. 2013;167(1):14–20. [PubMed: 23128151]
4. Marx K, Ribakove S. Selling Out Kids' Health: 10 Years of Failure from Restaurants on Kids' Meals. Center for Science in the Public Interest. October 2021.
5. Moran AJ, Subramanian SV, Rimm EB, Bleich SN. Characteristics Associated with Household Purchases of Sugar-Sweetened Beverages in US Restaurants. *Obesity (Silver Spring)*. Feb 2019;27(2):339–348. doi:10.1002/oby.22380 [PubMed: 30609301]
6. Harris JL, Schwartz MB, Munsell CR, et al. Fast Food FACTS 2013: Measuring Progress in Nutrition and Marketing to Children and Teens. 2013:1–127. Fast Food FACTS. November 2013. https://www.fastfoodmarketing.org/media/FastFoodFACTS_Report.pdf
7. Federal Trade Commission. A Review of Food Marketing to Children and Adolescents: Follow-Up Report. 2012:356. <https://www.ftc.gov/sites/default/files/documents/reviews/review-food-marketing-children-and-adolescents-follow-report/121221foodmarketingreport.pdf>
8. UConn Rudd Center for Food Policy & Obesity. Fast Food Advertising: Billions in spending, continued high exposure by youth. 2021. Fast Food Facts 2021. <https://www.fastfoodmarketing.org/media/FACTS%20Summary%20FINAL%206.15.pdf>

9. Kids LiveWell. National Restaurant Association. Accessed July 7, 2022. <https://restaurant.org/education-and-resources/learning-center/food-nutrition/kids-live-well/>
10. Harpainter P, Hewawitharana S, Lee D, et al. Voluntary Kids' Meal Beverage Standards: Are They Sufficient to Ensure Healthier Restaurant Practices and Consumer Choices? Article. INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH. 2020-08-01 2020;175275. doi:10.3390/ijerph17155275
11. Elbel B, Gyamfi J, Kersh R. Child and adolescent fast-food choice and the influence of calorie labeling: a natural experiment. Research Support, N.I.H., Extramural Research Support, Non-U.S. Gov't. Int J Obes (Lond). Apr 2011;35(4):493–500. doi:10.1038/ijo.2011.4
12. Otten J, Hekler E, Krukowski R, et al. Food Marketing to Children Through Toys Response of Restaurants to the First U.S. Toy Ordinance. Article. AMERICAN JOURNAL OF PREVENTIVE MEDICINE. 2012-01-01 2012;42:56–60. doi:10.1016/j.amepre.2011.08.020 [PubMed: 22176847]
13. Perez CL, Moran A, Headrick G, McCarthy J, Cradock AL, Pollack Porter KM. State and Local Healthy Kids' Meal Laws in the United States: A Review and Content Analysis. J Acad Nutr Diet. Dec 8 2021;doi:10.1016/j.jand.2021.12.003
14. Choi J, Laibson D, Madrian B, Metrick A. Optimal defaults. AMERICAN ECONOMIC REVIEW. 2003-05-01 2003;93:180–185.
15. Peters J, Beck J, Lande J, et al. Using Healthy Defaults in Walt Disney World Restaurants to Improve Nutritional Choices. J Assoc Consum Res. Jan 2016;1(1):92–103. doi:10.1086/684364 [PubMed: 30417105]
16. Anzman-Frasca S, Mueller MP, Lynskey VM, Harelick L, Economos CD. Orders Of Healthier Children's Items Remain High More Than Two Years After Menu Changes At A Regional Restaurant Chain. Health Aff (Millwood). Nov 2015;34(11):1885–92. doi:10.1377/hlthaff.2015.0651 [PubMed: 26526246]
17. Ulrich RS, Zimring C, Zhu X, et al. A Review of the Research Literature on Evidence-Based Healthcare Design. Herd-Health Environments Research & Design Journal. Spr 2008;1(3)
18. McCluskey J, Mittelhammer R, Asiseh F. FROM DEFAULT TO CHOICE: ADDING HEALTHY OPTIONS TO KIDS' MENUS. AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS. 2012-01-01 2012;94:338–343. doi:10.1093/ajae/aar106
19. Ferrante M, Johnson S, Miller J, Bellows L. Switching up sides: Using choice architecture to alter children's menus in restaurants. APPETITE. 2021-09-21 2022;168105704. doi:10.1016/j.appet.2021.105704
20. Zaltz DA, Lee DL, Woodward-Lopez G, Ritchie LD, Bleich SN, Benjamin-Neelon SE. Adherence to Healthy Default Beverage Laws for Children's Meals in 3 US Cities. Article. American Journal of Preventive Medicine. Jul 2023;65(1):67–73. doi:10.1016/j.amepre.2023.01.023 [PubMed: 36764834]
21. Powell LM, Vandenbroeck A, Leider J, Pipito AA, Moran A. Evaluation of Fast-Food Restaurant Kids' Meal Beverage Offerings 1 Year After a State-Level Healthy Beverage Default Policy. AJPM focus. 2024-06-01 2024;3:100226. doi:10.1016/j.focus.2024.100226 [PubMed: 38654750]
22. Powell LM, Leider J, Pipito AA, Moran A. Evaluation of Short-Term Changes in Fast-Food Restaurant Online Kids' Meal Beverage Offerings Following a State-Level Healthy Beverage Default Policy. Article. Current Developments in Nutrition. Apr 2023;7(4):6. 100045. doi:10.1016/j.cdnut.2023.100045 [PubMed: 37304845]
23. Local Law of the City of New York No. 75, City Council of New York (2019).
24. Children's Meals at Food Service Establishments, 190505, The Council of the City of Philadelphia (2019).
25. Data from: DP05 | ACS Demographic and Housing Estimates: 2019 ACS 5-Year Estimates Data Profiles. United States Census Bureau. 2019. Washington, DC.
26. Ritchie LD, Lessard L, Harpainter P, et al. Restaurant kids' meal beverage offerings before and after implementation of healthy default beverage policy statewide in California compared with citywide in Wilmington, Delaware. Public Health Nutr. Apr 12 2021:1–11. doi:10.1017/s1368980021001245
27. SAS. Version 9.4. SAS Institute; 2016. www.sas.com.

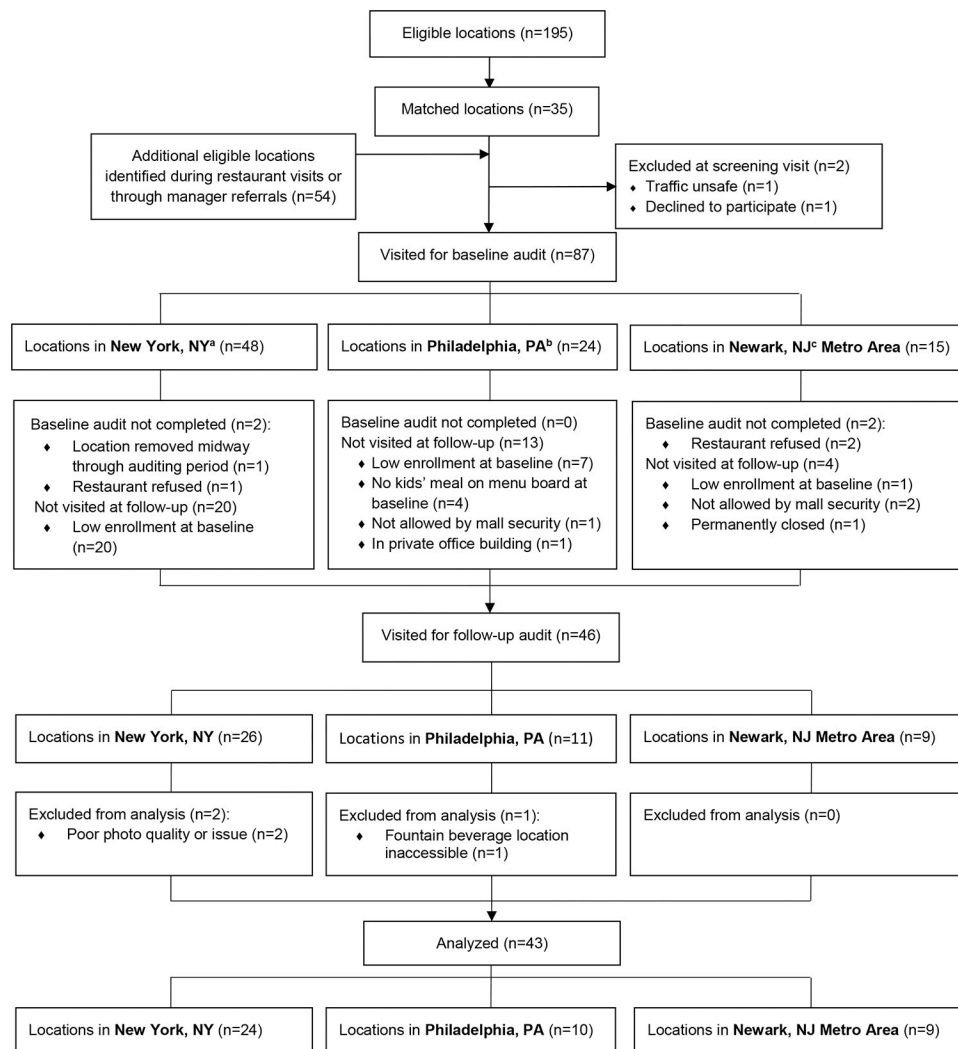
28. Dunn CG, Vercammen KA, Frelrier JM, Moran AJ, Bleich SN. Nutrition composition of children's meals in twenty-six large US chain restaurants. *Public Health Nutr.* Aug 2020;23(12):2245–2252. doi:10.1017/s1368980019004907 [PubMed: 32456746]
29. Malik VS, Pan A, Willett WC, Hu FB. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *Review. Am J of Clin Nutr.* Oct 2013;98(4):1084–1102. doi:10.3945/ajcn.113.058362 [PubMed: 23966427]
30. Valenzuela MJ, Waterhouse B, Aggarwal VR, Bloor K, Doran T. Effect of sugar-sweetened beverages on oral health: a systematic review and meta-analysis. *Eur J Public Health.* Feb 1 2021;31(1):122–129. doi:10.1093/eurpub/ckaa147 [PubMed: 32830237]
31. Ahuja K, Chandra V, Lord V, Peens C. Ordering in: The rapid evolution of food delivery. McKinsey & Company: Technology, Media, & Telecommunications Practice; 2021:13. Accessed Aug 2, 2022. <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/ordering-in-the-rapid-evolution-of-food-delivery>
32. Thompson HR, Martin A, Storchlic R, Singh S, Woodward-Lopez G. Limited implementation of California's Healthy Default Beverage law for children's meals sold online. *Public Health Nutr.* Jan 10 2022;1–10. doi:10.1017/s1368980022000039
33. Mueller M, Shonkoff E, Folta S, Anzman-Frasca S, Economos C. Orders of Healthier Adult Menu Items in a Full-Service Restaurant Chain with a Healthier Children's Menu. *NUTRIENTS.* 2020–11-01 2020;123253. doi:10.3390/nu12113253
34. Shonkoff ET, Anzman-Frasca S, Lynskey VM, Chan G, Glenn ME, Economos CD. Child and parent perspectives on healthier side dishes and beverages in restaurant kids' meals: results from a national survey in the United States. *BMC Public Health.* 07 2017;18(1):56. doi:10.1186/s12889-017-4610-3 [PubMed: 28743250]
35. Fuster M, Abreu-Runkle R, Handley MA, et al. Promoting healthy eating in Latin American restaurants: a qualitative survey of views held by owners and staff. *BMC Public Health.* Apr 27 2022;22(1):843. doi:10.1186/s12889-022-13294-7 [PubMed: 35477376]
36. Fuster M, Handley MA, Alam T, et al. Facilitating Healthier Eating at Restaurants: A Multidisciplinary Scoping Review Comparing Strategies, Barriers, Motivators, and Outcomes by Restaurant Type and Initiator. *Int J Environ Res Public Health.* Feb 4 2021;18(4)doi:10.3390/ijerph18041479 [PubMed: 35010280]

Research Snapshot:**Research Question:**

Were changes observed in the beverages listed on kids' meal menus in three fast food chains upon implementation of two local healthy kids' meal beverage default policies compared with chains in a control community without such policy?

Key Findings:

After the start date of healthy beverage policies, almost all locations in two of the three restaurant chains listed only allowable beverages on their menu board, regardless of their location in a community with or without a policy. Healthy default beverage policies could result in wider accessibility of healthier beverage options for children in these restaurant chains.

**Figure 1.**

Flow diagram of fast-food chain restaurant location selection before (baseline) and after (follow-up) implementation of a healthy default kids' meal beverage policy in two cities (New York, New York and Philadelphia, Pennsylvania), with the Newark, New Jersey metropolitan area used as a comparison community, October 2019 – June 2022

^a NY = New York. ^b PA = Pennsylvania. ^c NJ = New Jersey.

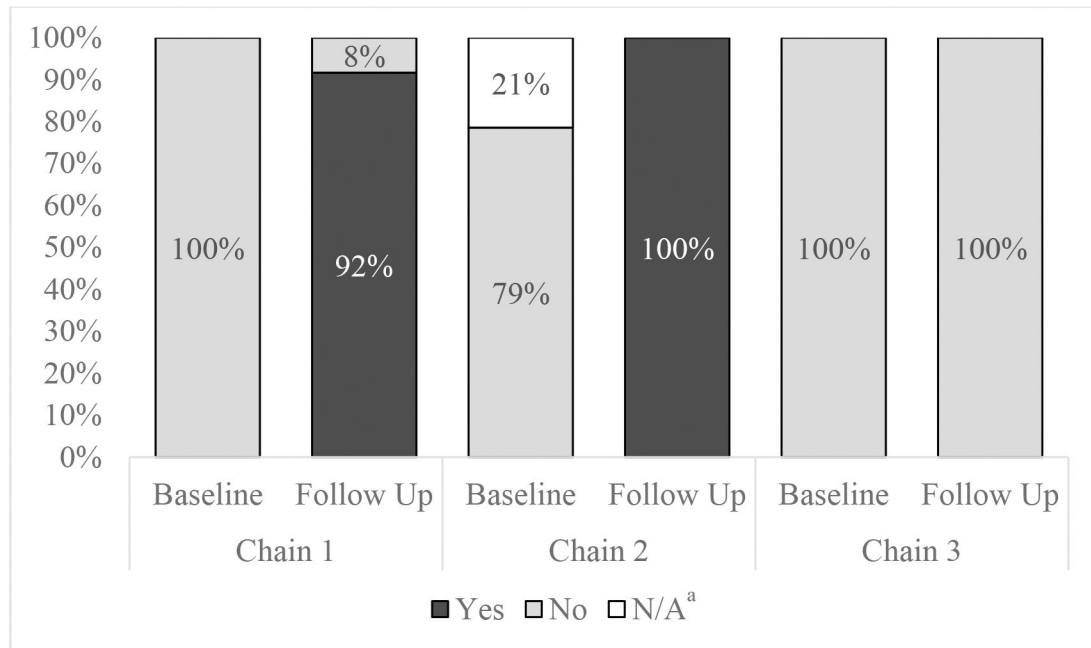


Figure 2.

Percentage of fast-food chain restaurant locations (N=43) by chain where all beverage options written with the kids' meal on the menu board are allowable under the kids' meal policy, in three metro areas (two intervention, one comparison), October 2019-June 2022.

^a N/A = not applicable, indicating locations (n=6 in Chain 2) where the menu board did not show a kids' meal with a beverage when visited, despite having one during screening visits.

Table 1.

Description of fast-food chain restaurant locations visited in three metro areas before (baseline) and after (follow-up) implementation of a healthy default kids' meal beverage policy, October 2019 – June 2022

	All Restaurants, n=43	By Metro Area		
		New York, New York (Intervention), n=24	Philadelphia, Pennsylvania (Intervention), n=10	Newark, New Jersey Metro Area (Comparison), n=9
Restaurant chain, n (%)				
Chain 1	12 (28)	5 (21)	3 (30)	4 (44)
Chain 2	28 (65)	17 (71)	7 (70)	4 (44)
Chain 3	3 (7)	2 (8)	0 (0)	1 (12)
Demographic characteristics of the population residing in zip code where restaurant is located ^a				
Median age (years), ^b mean $\pm$ SD ^c	35 $\pm$ 3.9 *	36 $\pm$ 4.1	32 $\pm$ 1.7	37 $\pm$ 3.7
Percentage with a high school education or higher, mean $\pm$ SD	78 $\pm$ 10 *	74 $\pm$ 10	80 $\pm$ 10	84 $\pm$ 7
Percentage below poverty level, mean $\pm$ SD	25 $\pm$ 12 *	25 $\pm$ 9	34 $\pm$ 15	15 $\pm$ 5
Percentage Black or African American non-Hispanic, mean $\pm$ SD	35 $\pm$ 30 *	35 $\pm$ 30	45 $\pm$ 31	25 $\pm$ 27
Percentage Hispanic or Latino, mean $\pm$ SD	35 $\pm$ 25 *	38 $\pm$ 25	24 $\pm$ 21	39 $\pm$ 29
Menu board shows a kids' meal with a beverage, n (%)				
Baseline	37 (86)	18 (75)	10 (100)	9 (100)
Follow-up	43 (100)	24 (100)	10 (100)	9 (100)

^aSource: American Community Survey 2019 Estimates,²⁵ summary measures aggregated at the zip code level.

^bMedian age in years obtained from zip code-aggregated estimates. Mean and standard deviation reported here represent the average and spread across the zip codes in which restaurants studied are located.

^cSD = standard deviation.

* Significant difference in means between metro areas ($P < 0.05$), based on t-tests.

Table 2.

Kids' meal beverage options at 43 fast-food chain restaurant locations visited in three metro areas before (baseline) and after (follow-up) implementation of a healthy default kids' meal beverage policy, October 2019 – June 2022

	All Restaurants		By Metro Area ^a					
			New York, New York (Intervention)		Philadelphia, Pennsylvania (Intervention)		Newark, New Jersey Metro Area (Comparison)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
All beverage options written with the kids' meal on the menu board are allowable under the kids' meal policy, n (%)	n=43	n=43	n=24	n=24	n=10	n=10	n=9	n=9
Yes	0 (0)	39 (91) [*]	0 (0)	21 (88)	0 (0)	10 (100)	0 (0)	8 (89)
No	37 (86)	4 (9)	18 (75)	3 (13)	10 (100)	0 (0)	9 (100)	1 (11)
No: fountain drink listed with both allowable and non-allowable options	23 (53)	4 (7)	10 (42)	3 (13)	8 (80)	0 (0)	5 (56)	1 (11)
No: fountain drink listed with only non-allowable options	14 (33)	0 (0)	8 (33)	0 (0)	2 (20)	0 (0)	4 (44)	0 (0)
Not applicable: Menu board does not show a kids' meal with a beverage	6 (14)	0 (0)	6 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Beverages written with the kids' meal on the menu board, n (%)	n=37	n=43	n=18	n=24	n=10	n=10	n=9	n=9
Allowable drinks	3 (8)	42 (98) [*]	2 (11)	23 (96)	0 (0)	10 (100)	1 (11)	9 (100)
Water	0 (0)	11 (26) [*]	0 (0)	4 (17)	0 (0)	3 (30)	0 (0)	4 (44)
100% juice ≤8 oz	0 (0)	28 (65) [*]	0 (0)	17 (71)	0 (0)	7 (70)	0 (0)	4 (44)
Diluted juice ≤8 oz ^b	3 (8)	11 (26) [*]	2 (11)	6 (25)	0 (0)	0 (0)	1 (11)	5 (56)
Plain milk nonfat/low-fat and milk substitutes ≤8 oz ^b	3 (8)	3 (7)	2 (11)	2 (8)	0 (0)	0 (0)	1 (11)	1 (11)
Flavored milk nonfat/low-fat and milk substitutes ≤8 oz ^b	3 (8)	3 (7)	2 (11)	2 (8)	0 (0)	0 (0)	1 (11)	1 (11)
Non-allowable drinks	37 (100)	4 (9) [*]	18 (100)	3 (13)	10 (100)	0 (0)	9 (100)	1 (11)
Fountain drink ^b	37 (100)	4 (9) [*]	18 (100)	3 (13)	10 (100)	0 (0)	9 (100)	1 (11)
Other non-allowable drinks ^c	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Drinks in service at the fountain, n (%)	n=37	n=4	n=18	n=3	n=10	N/A ^d	n=9	n=1

	By Metro Area ^a					
	All Restaurants		New York, New York (Intervention)		Philadelphia, Pennsylvania (Intervention)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Sugary drinks	37 (100)	4 (100)	18 (100)	3 (100)	10 (100)	9 (100)
Diet drinks	37 (100)	4 (100)	18 (100)	3 (100)	10 (100)	9 (100)
Water	23 (62)	4 (100)	10 (56)	3 (100)	8 (80)	5 (56)
Other drinks ^e	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

^a Significant difference from Baseline to Follow-up ($P < 0.05$), based on McNemar's exact test examining the difference in proportion, used when responses varied among locations at baseline (i.e., some "yes", some "no"), or the exact binomial test examining the proportion with the outcome at follow-up when responses did not vary at baseline (i.e., all locations "yes" or all locations "no").

^d No significant differences were observed between metro areas ($P < 0.05$) from Baseline to Follow-up, based on repeated measures logistic regression examining the difference in proportion with a time $\times$ metro area interaction when responses varied among locations at baseline, or Fisher's exact test examining the proportion with the outcome at follow-up when responses did not differ within metro area at baseline.

^b Statistical tests for differences between metro areas from Baseline to Follow-up were not estimated due to small sample size.

^c Other non-allowable drinks include sugary drinks, diet drinks, 100% juice >8 oz, diluted juice >8 oz, plain milk/low-fat and milk substitutes >8 oz, plain milk reduced fat/whole, and flavored milk reduced fat/whole

^d N/A = not assessed, due to zero restaurant locations observed to have fountain drinks written with the kids' meal on the menu board.

^e Other drinks include 100% juice, milk (not specified), and unsweetened tea