Title: Food Retailer Actions towards the National Strategy on Hunger, Nutrition, and Health to Promote Nutrition Security: Applicability of the Business Impact Assessment-Obesity as a Monitoring Tool

Manuscript Type: Commentary/ position paper

Authors:

Maria DeNunzio, MS. Department of Human Nutrition, Foods, and Exercise, Virginia Tech. mdenunzio8@vt.edu

Bailey Houghtaling, PhD, MSc, RDN. Center for Nutrition and Health Impact & Department of Human Nutrition, Foods, and Exercise, Virginia Tech. bhoughtaling@centerfornutrition.org

Vivica Kraak, PhD, MS, RDN. Department of Human Nutrition, Foods, and Exercise, Virginia Tech. vivica51@vt.edu

Maaz Gardezi, PhD. Department of Sociology, Virginia Tech. maaz@vt.edu

Elena Serrano, PhD. Department of Human Nutrition, Foods, and Exercise, Virginia Tech, and the Virginia Cooperative Extension Family Nutrition Program. serrano@vt.edu

Sarah Misyak, PhD, MPH. Department of Human Nutrition, Foods, and Exercise, Virginia Tech, and the Virginia Cooperative Extension Family Nutrition Program. smisyak@vt.edu

Corresponding Author: Sarah Misyak, smisyak@vt.edu

Funding Sources: The authors report no funding for the preparation and publication of this article.

Conflicts of Interest: Authors Maria DeNunzio, Bailey Houghtaling, Vivica Kraak, Maaz Gardezi, Elena Serrano, and Sarah Misyak declare that they have no conflicts of interest.

Human Rights: This article does not contain any studies with human participants performed by any of the authors.

Informed Consent: This study does not involve human participants and informed consent was therefore not required.

Welfare of Animals: This article does not contain any studies with animals performed by any of the authors.

Manuscript accepted to *Translational Behavioral Medicine*

September 2024

Copy edits not yet applied

ABSTRACT:

The White House National Strategy on Hunger, Nutrition, and Health (National Strategy) encourages actions across government and society to promote nutrition security. Nutrition security includes adequate food, diet quality, and equity, and food retail settings can promote these major concepts. Of all National Strategy whole-of-society calls to action, food retailers can contribute to 15 calls as key actors. However, there is currently no standardized monitoring tool to track food retailers' commitments and actions toward the National Strategy to promote nutrition security. The Business Impact Assessment-Obesity and population-level nutrition (BIA-Obesity), a tool originally developed for corporate accountability monitoring, can be tailored for the National Strategy and nutrition security, given its standardized indicators and process to assess food company policies and commitments across six domains. We discuss the fit of the BIA-Obesity indicators for tracking food retailers' commitments and actions across four pillars of the National Strategy. Existing indicators are appropriate to monitor components of Pillar 1: Improve Food Access and Affordability; Pillar 2: Integrate Nutrition and Health; Pillar 3: Empower All Consumers to Make and Have Access to Healthy Choices; and Pillar 5: Enhance Nutrition and Food Security Research. We suggest expanding current indicators to include equity, local foods, the digital food environment, and food waste reduction to improve alignment of the BIA-Obesity with the National Strategy. Application of the BIA-Obesity as an existing tool can facilitate data cohesion and more rapid assessment of the food retailer landscape to mutually meet nutrition security goals by 2030.

KEYWORDS:

Food retailers; Nutrition security; Corporate monitoring; BIA-Obesity; White House Conference

LAY SUMMARY:

The White House National Strategy on Hunger, Nutrition, and Health describes a whole-of-government and whole-of-society approach to address health disparities and ensure that all consumers have equitable access to safe, affordable, and nutritious food. Food retailers can contribute to many of the suggested private sector actions. However, there is no standardized method for tracking food retailer commitments and actions in support of the National Strategy. The BIA-Obesity, a tool used globally for corporate accountability monitoring, is fit for purpose to monitor how food retailers act in support of the National Strategy because the indicators align with many calls to action for food retailers. Suggestions for expanding the BIA-Obesity to cover gaps between the current indicators and National Strategy are provided.

TEASER TEXT:

The BIA-Obesity is an existing tool with standardized indicators. The existing indicators, with some expansions, are appropriate for monitoring food retailer actions towards the National Strategy on Hunger, Nutrition, and Health in support of nutrition security for all.

68 **INTRODUCTION AND BACKGROUND:**

69 Nutrition security is defined as equitable access to safe, healthy, and nutritious foods to promote well-
70 being and overall flourishing of individuals and populations [1, 2]. Adequate and affordable food, dietary
71 quality, and equity are primary concepts within nutrition security and are central to the United States
72 (US) federal government's efforts to promote health and well-being [1, 3, 4]. In September 2022, the
73 White House hosted the White House Conference on Hunger, Nutrition, and Health. The White House
74 Conference also marked the launch of the National Strategy on Hunger, Nutrition, and Health (National
75 Strategy) [5], a guidance document to "end hunger and increase healthy eating and physical activity by
76 2030 so fewer Americans experience diet-related diseases" [5]. There are two groups of actions in the
77 National Strategy: one group of commitments and priority goals for US federal government agencies;
78 and one group of whole-of-society calls to action designed for partners outside of federal government
79 agencies. The calls to action encourage partners in the private sector, state and local government,
80 academia, and philanthropy to make commitments and take action to support the overall goal of the
81 National Strategy. We focus on the whole-of-society calls to action in this commentary. Food retailers are
82 businesses where consumers purchase food for home or onsite consumption, such as grocery stores
83 (e.g. Food Lion) and big box markets (e.g. Walmart) [6, 7]. Food retailers are important actors in nutrition
84 security pro motion and are either specified or can contribute as key actors in 15 of the 39 calls to action
85 across four of the five pillars of the National Strategy (see Table 1). Large food retailers are powerful
86 economic actors and important food access partners in the US food system. For example, the top 100
87 North American food retailers reported more than $2.2 trillion dollars in sales in 2021 [9]. Walmart,
88 Costco, and Kroger are among the most prominent companies by number of locations and sales, and
89 operate more than 8800 combined brick-and mortar store locations nationwide [9–12]. Nearly 11 million
90 people shop online or in-store at Kroger each day [13]. Aldi, the fastest-growing food retailer in the US,
91 currently operates more than 2300 stores across 39 states and the District of Columbia, with a 30%
92 increase in in-store visits over the past 3 years [14, 15]. Additionally, many prominent food retailers have
93 a significant digital presence and reach the greater than 50% of US households who report purchasing
94 groceries online at least some of the time [16]. In addition to their influence on food access, prominent
95 food retailers can promote equity to support nutrition security. Large food retailers often are authorized
96 to accept Supplemental Nutrition Assistance Program (SNAP) and Special Supplemental Nutrition
97 Program for Women, Infants, and Children (WIC) benefits, and thus are wide-reaching settings to ensure
98 that the food environment supports diet quality and food affordability for communities with fewer
99 resources [17, 18]. Ensuring that SNAP- and WIC-authorized retail settings promote nutrition security is

100 an important step to creating an overall food environment and system for health equity. Given the
101 economic reach of prominent US food retailers and extensive documentation of commercial influences
102 on population health and nutrition [19–22], it is imperative to monitor food retailers' commitments and
103 actions toward achieving relevant goals in the National Strategy. Application of a standardized tool and
104 process would promote data cohesion and rapid assessment, both of which are needed to inform
105 accountability actions like regulation or incentives [23] to meet the National Strategy's nutrition security
106 goals by 2030. The Business Impact Assessment-Obesity and population- level nutrition (BIA-Obesity) is
107 an accountability tool and process designed to score food and beverage company policies,
108 commitments, and practices pertaining to business impacts on human health across six domains [8]. The
109 six domains are corporate strategy, product formulation, nutrition labeling, product and brand
110 promotion, product accessibility, and relationships with other organizations [8]. The original purpose of
111 the BIA-Obesity was to assess and monitor the policies, commitments, and actions of prominent food
112 and beverage companies that affect population nutrition and diet-related chronic diseases at a national
113 level [8]. Three subtypes of the BIA- Obesity (supermarkets, chain restaurants, manufacturers) have been
114 adapted and used in several countries worldwide, including one study of prominent SNAP-authorized
115 food retailers in the US [8, 24–27, 28–31]. Although nutrition security is not explicitly measured in the
116 BIA-Obesity, several of its domains assess one or more concepts related to nutrition security. For
117 example, the product accessibility domain assesses affordability and availability of healthy foods, which
118 are contextual fac tors that influence diet quality, and overall nutrition security [3, 4]. Further, the
119 product formulation domain addresses the nutrient content of food retailers' own-brand products, a
120 product segment with affordable prices for consumers and increasingly valuable market share for
121 retailers [32, 33]. In this commentary, we discuss a novel application of the BIA-Obesity: to monitor
122 prominent food retailer commitments and actions toward the National Strategy in support of nutrition
123 security. We discuss the fit of the existing indicators to the whole-of-society calls to action relevant to
124 food retailers and provide recommendations for additional indicators to improve the alignment with the
125 National Strategy.

126 **Alignment between BIA-Obesity Indicators and National Strategy Calls to Action**

127 For this commentary, we will discuss the indicators in the BIA-Obesity supermarket sub-type [8] for
128 application to all store-style food retailers, as has been done in prior US research using the BIA-Obesity
129 [31]. Table 1 includes brief definitions of each BIA-Obesity domain. Seventy-five indicators from the BIA-
130 Obesity are applicable for a US context. Following BIA-Obesity guidance for selecting appropriate
131 indicators for a national context [8], we excluded indicators for which actions are mandated by US

132 government policy, such as disclosing the ingredient list for processed foods and artificial trans fat
133 removal [34, 35]. Various combinations of the applicable indicators are appropriate for monitoring four
134 of five pillars in the National Strategy: Pillar 1: Improving Food Access and Affordability; Pillar 2:
135 Integrating Nutrition and Health; Pillar 3: Empowering Consumers for Healthy Choices; and Pillar 5:
136 Enhance Nutrition and Food Security Research. Pillar 4: Supporting Physical Activity for All, is outside the
137 role and function of food retailers for nutrition security promotion and is not discussed in this
138 commentary. Table 1 displays the number of indicators in each BIA-Obesity domain that fit the purpose
139 for monitoring food retailers' progress toward relevant calls to action in the National Strategy.
140 Supplementary Material contains a table displaying all indicators and their specific fit with each call to
141 action. [insert Table 1 HERE. Table 1 is below the reference list for review purposes.]

The BIA-Obesity domains of corporate strategy and relationships with other organizations demonstrated the most alignment across pillars of the National Strategy. BIA-Obesity indicators for relationships with other organizations can be used for monitoring research support, partnerships, and joint ventures that are critical to make meaningful progress for Pillar 1: Improve Food Access and Affordability. Similarly, this group of indicators can be used to collect standardized data on food retailer relationships for planning and implementation of Food is Medicine strategies (e.g. produce pre scription programs) in support of Pillar 2: Integrate Nutrition and Health. The research and data sharing called for in Pillar 5: Enhance Nutrition and Food Security Research require multi-actor collaborations and partnerships, and the indicators can help assess retailer positionality for these relationships. Understanding how food retailers are interacting with other actors in the food system may identify opportunities for partnerships, needs for technical assistance, and areas for policy development.

Pillar 2: *Integrate Nutrition and Health* revealed the least overlap with the BIA-Obesity indicators. Food is Medicine initiatives represent lucrative and meaningful opportunities for retailers, especially with potential federal funding to support the initiatives [36]. These initiatives are growing in popularity among prominent food retailers, who are key partners in programs administered by health care or public health actors [37, 38]. The BIA-Obesity indicators within corporate strategy and relationships with other organizations can monitor retailer positionality for Food is Medicine efforts, but additional indicators are needed to assess detailed program components [39].

Each BIA-Obesity domain of product formulation, nutrition labeling, product and brand promotion, and product accessibility aligned with portions of Pillar 1: *Improve Food Access and Affordability*; Pillar 3: *Empower Consumers for Healthy Choices*, and Pillar 5: *Enhance Nutrition and Food Security Research*. Product formulation indicators can be used to monitor the nutritional content of own-brand products and promoted meals in retailer- food service partnerships and foodservice in retail, and thus contribute to tracking progress towards several of the calls within Pillar 3: *Empower Consumers for Healthy Choices*. The product and brand promotion indicators can track how food retailers are re-designing store layouts and marketing to promote more nutritious foods and thus align with several of the calls in Pillar 3: *Empower Consumers for Healthy Choices.* Many product accessibility indicators are appropriate for monitoring retailer commitments and actions towards Pillar 1: *Improve Food Access and Affordability* and Pillar 3*: Empower Consumers for Healthy Choices*, particularly call 1.1 to improve healthier food offerings in existing stores.

Across all pillars, the BIA-Obesity assesses major concepts of nutrition security at the population level: food access, affordability, and diet quality. Use of the BIA-Obesity as a monitoring tool for retailer

commitments and actions towards specific concepts of nutrition security would provide standardized data and a more cohesive understanding of the nutrition security landscape. The standardized indicators for retailer-level food access, affordability, and diet quality commitments may be useful for overall nutrition security monitoring, even outside the calls to action and time goals of the National Strategy. The BIA-Obesity can meet some of the need for retailer-level nutrition security assessment and monitoring tools.

Suggestions for Expanding the BIA-Obesity to Align with the National Strategy

Suggestions for expanding the BIA-Obesity to align with the National Strategy While the BIA-Obesity is an appropriate tool for monitoring food retailer progress toward the National Strategy, additional indicators are needed to cover four aspects of the National Strategy that are not currently addressed: a focus on equity, supporting local food systems, digital food retail environments, and food waste reduction. Equity is a core concept for nutrition security and the National Strategy [1, 4]. Developing equity indicators to add to the BIA-Obesity for the National Strategy is key for ensuring equity remains a central theme in actions and monitoring efforts. An equity promotion framework, used in conjunction with an accountability framework, can guide the indicator development process [23, 40]. Potential areas of focus include monitoring the sale and promotion of culturally inclusive foods [41, 42], measuring the extent to which “good vs bad” food narratives exist in corporate practices [43], leveraging mobile market programs to build community capacity [43], assessing targeted or predatory retailer marketing practices across demographic groups [44–46], and addressing disparities in nutritious food access across communities [33–35, 47–49]. The National Strategy encourages development of local food systems through purchasing agreements, foodservice partnerships, and use of nutrition assistance funds at farmers markets. Many prominent food retailers market their support for local food by highlighting purchases from producers with close proximity to store locations [50–52]. Local food indicators are not currently included in the BIA- Obesity. An expanded version should include indicators to assess the social, economic, and nutritional equity impacts of new and existing food retailer purchases and promotions of local foods to align with the National Strategy. Local food promotion also represents an opportunity to increase the diet quality potential of food retail sites by expanding offerings of fruits and vegetables. The BIA-Obesity does not contain indicators to assess fruit and vegetable access, affordability, and availability, but an adapted version for the US context could assess priority food groups for nutrition security. The Nutrition Environment Measurement Surveys have well-tested food environment measures that are commonly adapted for research and practice settings [53], and this set of tools should be explored for adaptation into corporate commitment indicators. Careful consideration should be given to

the definition of “local” for a national tool, as there is not currently a standardized definition [54, 55]. Previous research on the barriers to local food purchasing in corporate retailers [56] could inform indicator development. Digital platforms are an understudied element of the food environment and there is a dearth of standardized monitoring tools for digital settings [57, 58]. An expanded BIA-Obesity for the National Strategy should include indicators specifically for the digital food retail environment to assess access to nutrition labeling, responsible development of algorithms for product promotion [59] and retailer participation in nutrition promotion programs on their digital platforms. Existing frameworks to understand the influence of the digital food environment on consumer behavior [60] and early evaluations of online food retailer policies and practices [61, 62] may guide development of indicators for improved account ability and stronger governance of the digital food environment. Food waste reduction initiatives are included as multi-actor targets in the National Strategy, but the current set of BIA-Obesity indicators does not assess food waste policies and programs. Food retailers can and do contribute to food waste reduction and support nutrition security through diversion or donation programs [63–67]. The BIA-Sustainability [68], a new set of indicators to monitor prominent retailer actions for planetary health, contains food waste indicators that can be incorporated into an expanded BIA-Obesity for the National Strategy. Inclusion of the BIA-Sustainability food waste indicators prevents the need to develop new indicators and thus expedites the monitoring process. As food waste indicators are incorporated into an expanded BIA- Obesity for the National Strategy, we recommend that diet quality promotion is considered in diversion and donation programs. Understanding the types and quality of foods in diversion and donation streams is important to integrate nutrition security promotion into all aspects of the food system, and prioritizing these pathways aligns with the preferred strategies to prevent food waste to reduce harmful impacts to the natural environment [69]. Conclusions The BIA-Obesity is an appropriate tool to monitor prominent food retailer commitments and actions for the National Strategy. There is substantial alignment between the BIA-Obesity indicators and the National Strategy, such that use of these standardized indicators could facilitate monitoring food retailer accountability toward nutrition security goals. Next steps for the public health community are to expand the BIA-Obesity to include indicators for equity, local foods, digital environments, and food waste reduction, and then test the expanded tool among prominent food retailers that have committed to the National Strategy [70–72]. There is an urgent need to track food retailers’ progress toward the 2030 National Strategy goals to understand the landscape of retailers’ commitments and develop and implement timely interventions and technical assistance strategies to support food retailers’ actions.

REFERENCES

1. Mozaffarian, D., Fleischhacker, S. E., & Andrés, J. R. (2021). Prioritizing Nutrition Security in the US. *Journal of American Medical Association*, *325*(16), 1605–1606. https://doi.org/10.1001/jama.2021.1915

2. U.S. Department of Agriculture. (n.d.). *Food and Nutrition Security*. United States Department of Agriculture. Retrieved August 30, 2023, from https://www.usda.gov/nutrition-security

3. Seligman, H. K., Levi, R., Adebiyi, V. O., Coleman-Jensen, A., Guthrie, J. F., & Frongillo, E. (2023). Assessing and monitoring nutrition security to promote healthy dietary intake and outcomes in the United States. *Annual Review of Nutrition*, *43*, 409–429. https://doi.org/doi/10.1146/annurev-nutr-062222-023359

4. United States Department of Agriculture Food and Nutrition Service. (n.d.). *USDA Actions on Nutrition Security*. https://www.usda.gov/sites/default/files/documents/usda-actions-nutrition-security-infographic.pdf

5. The White House. (2022, September). *Biden-Harris Administration National Strategy on Hunger, Nutrition, and Health*. https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf

6. Food and Nutrition Service. (2023). *SNAP Store Type Definitions*. SNAP Store Type Definitions. https://www.fns.usda.gov/snap/store-definitions

7. Glanz, K., Johnson, L., Yaroch, A. L., Phillips, M., Ayala, G. X., & Davis, E. L. (2016). Measures of retail food store environments and sales: Review and implications for healthy eating initiatives. *Journal of Nutrition Education and Behavior*, *48*(4). https://doi.org/doi: 10.1016/j.jneb.2016.02.003

8. Sacks, G., Vanderlee, L., Robinson, E., Vandevijvere, S., Cameron, A. J., Ni Mhurchu, C., Lee, A., Ng, S. H., Karupaiah, T., Vergeer, L., L'Abbé, M., & Swinburn, B. (2019). BIA-Obesity (Business Impact Assessment—Obesity and population-level nutrition): A tool and process to assess food company

policies and commitments related to obesity prevention and population nutrition at the national level. *Obesity Reviews*, *20*(S2), 78–89. https://doi.org/10.1111/obr.12878

9. Progressive Grocer. (2022). *The PG 100: Ranking Top Food Retailers in North America*. Progressive Grocer. https://progressivegrocer.com/pg-100-ranking-top-food-retailers-north-america

10. Costco Wholesale Corporation. (2024). *Costco Wholesale Company Profile*. Costco Wholesale. https://investor.costco.com/company-profile/default.aspx

11. The Kroger Company. (2023). *2023 Kroger Fact Book*. The Kroger Company. https://ir.kroger.com/files/doc_downloads/factbook/2023-pdf-fact-book.pdf

12. Walmart. (2024). *Walmart United States Quick Facts*. Walmart. https://corporate.walmart.com/about/location-facts/united-states

13. The Kroger Company. (2020). *Our Business – The Kroger Co.* Our Business. https://www.thekrogerco.com/about-kroger/our-business/

14. Aldi. (2024). *ALDI Store Directory | ALDI US*. Aldi All Stores. https://stores.aldi.us/

15. Acosta, G. (2023, February 13). Exploring ALDI's Unlimited Success With Limited Assortments. *Progressive Grocer*. https://progressivegrocer.com/exploring-aldis-unlimited-success-limited-assortments

16. Supermarket News. (2022). Grocery Shoppers Take the Omnichannel Route. *Supermarket News*. https://www.supermarketnews.com/consumer-trends/grocery-shoppers-take-omnichannel-route

17. Center on Budget and Policy Priorities. (2019). *SNAP Retailers Database | Center on Budget and Policy Priorities*. Center on Budget and Policy Priorities. https://www.cbpp.org/snap-retailers-database

18. Bleich, S. N., Moran, A. J., Vercammen, K. A., Frelier, J. M., Dunn, C. G., Zhong, A., & Fleischhacker, S. E. (2020). Strengthening the public health impacts of the Supplemental Nutrition Assistance

Program through policy. *Annual Review of Public Health*, *41*(1), 453–480. https://doi.org/10.1146/annurev-publhealth-040119-094143

19. Kickbusch, I., Allen, L., & Franz, C. (2016). The commercial determinants of health. *The Lancet Global Health*, *4*(12), e895–e896. https://doi.org/10.1016/S2214-109X(16)30217-0

20. Moodie, R., Stuckler, D., Monteiro, C., Sheron, N., Neal, B., Thamarangsi, T., Lincoln, P., Casswell, S., & Lancet NCD Action Group. (2013). Profits and pandemics: Prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries. *Lancet (London, England)*, *381*(9867), 670–679. https://doi.org/10.1016/S0140-6736(12)62089-3

21. Nestle, M. (2013). *Food Politics*. University of California Press.

22. IPES-Food. (2017). *Unravelling the Food- Health Nexus. Addressing Practices, Political Economy, and Power Relations to Build Healthier Food Systems*. The Global Alliance for the Future of Food and IPES-Food. https://www.ipes-food.org/_img/upload/files/Health_FullReport(1).pdf

23. Kraak, V., Swinburn, B., Lawrence, M., & Harrison, P. (2014). An accountability framework to promote healthy food environments. *Public Health Nutrition*, *17*(11), 2467–2483. https://doi.org/10.1017/S1368980014000093

24. Cetthakrikul, N., Phulkerd, S., Jaichuen, N., Sacks, G., & Tangcharoensathien, V. (2019). Assessment of the stated policies of prominent food companies related to obesity and non-communicable disease (NCD) prevention in Thailand. *Globalization and Health*, *15*(1), 12. https://doi.org/10.1186/s12992-019-0458-x

25. Kasture, A., Vandevijvere, S., Robinson, E., Sacks, G., & Swinburn, B. (2019). Benchmarking the commitments related to population nutrition and obesity prevention of major food companies in New Zealand. *International Journal of Public Health*, *64*(8), 1147–1157. https://doi.org/10.1007/s00038-019-01272-7

26. Ng, S., Sacks, G., Kelly, B., Yeatman, H., Robinson, E., Swinburn, B., Vandevijvere, S., Chinna, K., Ismail, M. N., & Karupaiah, T. (2020). Benchmarking the transparency, comprehensiveness and specificity of population nutrition commitments of major food companies in Malaysia. *Globalization and Health*, *16*(1), 35. https://doi.org/10.1186/s12992-020-00560-9

27. Sacks, G., Robinson, E., Cameron, A. J., Vanderlee, L., Vandevijvere, S., & Swinburn, B. (2020). Benchmarking the nutrition-related policies and commitments of major food companies in Australia, 2018. *International Journal of Environmental Research and Public Health*, *17*(17), 6118. https://doi.org/10.3390/ijerph17176118

28. University of Toronto. (2019). *BIA-Obesity Canada 2019*. Research Program for Nutrition Policy and Population Health. https://labbelab.utoronto.ca/bia-obesity-canada-2019/

29. Van Dam, I., Guillon, E., Robinson, E., Allais, O., Sacks, G., & Vandevijvere, S. (2022). Assessment of the commitments and performance of the European food industry to improve population nutrition. *International Journal of Public Health*, *67*, 1604116. https://doi.org/10.3389/ijph.2022.1604116

30. Van Dam, I., & Vandevijvere, S. (2022). Benchmarking the nutrition-related commitments and practices of major French food companies. *BMC Public Health*, *22*(1), 1435. https://doi.org/10.1186/s12889-022-13780-y

31. Houghtaling, B., Englund, T., Chen, S., Pradhananga, N., Kraak, V. I., Serrano, E., Harden, S. M., Davis, G. C., & Misyak, S. (2022). Supplemental Nutrition Assistance Program (SNAP)-authorized retailers received a low score using the Business Impact Assessment for Obesity and population-level nutrition (BIA-Obesity) tool. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-13624-9

32. Rajagopal, A. (2023, October 3). Private label spending not just about price, value: Report. *Supermarket News*. https://www.supermarketnews.com/private-label/private-label-spending-not-just-about-price-value-report

33. Private Label Manufacturers Association. (2024). *PLMA's 2024 Private Label Report. A Statistical Guide to Today's Store Brands*. Private Label Manufacturers Association. https://plma.com/sites/default/files/files/2024-02/yearend-report2024-final.pdf

34. Revocation of Uses of Partially Hydrogenated Oils in Foods, Pub. L. No. 88 FR 53764, 21 CFR 161, 21 CFR 164, 21 CFR 184, 21 CFR 186 Code of Federal Regulations (2023). https://www.federalregister.gov/documents/2023/08/09/2023-16725/revocation-of-uses-of-partially-hydrogenated-oils-in-foods

35. Food Labeling, 21 CFR 101 Code of Federal Regulations (2023). https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=101.4

36. Office of Disease Prevention and Health Promotion. (2024, January 30). *Food is Medicine: A Project to Unify and Advance Collective Action | health.gov*. Health.Gov. https://health.gov/our-work/nutrition-physical-activity/food-medicine

37. Auvinen, A., Simock, M., & Moran, A. (2022). Integrating produce prescriptions into the healthcare system: Perspectives from key stakeholders. *International Journal of Environmental Research and Public Health*, *19*(17), 11010. https://doi.org/10.3390/ijerph191711010

39. Newman, T., Sun Lee, J., Thompson, J. J., & Rajbhandari-Thapa, J. (2022). Current landscape of produce prescription programs in the U.S. *Journal Nutrition Education and Behavior*, *54*(6), 575–581. https://doi.org/10.1016/j.jneb.2022.02.011

40. Kumanyika, S. K. (2019). A framework for increasing equity impact in obesity prevention. *American Journal of Public Health*, *109*(10), 1350–1357. https://doi.org/10.2105/AJPH.2019.305221

41. Harper, K., Lewis, E., & Gittelsohn, J. (2020). Exploring accessibility of culturally relevant foods in a low-income neighborhood in Baltimore City. *Current Developments in Nutrition*, *4*(Suppl 2), 525. https://doi.org/10.1093/cdn/nzaa046_025

42. Goldschmidt, B. (2023). Making the Most of Multicultural Marketing. *Progressive Grocer*. https://progressivegrocer.com/making-most-multicultural-marketing

43. Conrad, A. (2020, September). *Identifying and Countering White Supremacy Culture in Food Systems*. Duke World Food Policy Center. https://wfpc.sanford.duke.edu/wp-content/uploads/sites/15/2022/05/Whiteness-Food-Movements-Research-Brief-WFPC-October-2020.pdf

44. Musicus, A. A., Hua, S., Moran, A. J., Duffy, E. W., Hall, M. G., Roberto, C. A., Carpentier, F. R. D., Sorscher, S., Wootan, M. G., Taillie, L. S., & Rimm, E. B. (2022). Front-of-package claims & imagery on fruit-flavored drinks and exposure by household demographics. *Appetite*, *171*, 105902. https://doi.org/10.1016/j.appet.2021.105902

45. Adeigbe, R. T., Baldwin, S., Gallion, K., Grier, S., & Ramirez, A. G. (2015). Food and beverage marketing to Latinos: A systematic literature review. *Health Education & Behavior*, *42*(5), 569–582. https://doi.org/10.1177/1090198114557122

46. Grier, S., & Kumanyika, S. (2010). Targeted Marketing and Public Health | Annual Reviews. *Annual Review of Public Health*, *31*, 349–369. https://doi.org/10.1146/annurev.publhealth.012809.103607

47. Sansom, G., & Hannibal, B. (2021). Disparate access to nutritional food; place, race and equity in the United States. *BMC Nutrition*, *7*(1), 29. https://doi.org/10.1186/s40795-021-00434-2

48. Singleton, C. R., Winkler, M., Houghtaling, B., Adeyemi, O. S., Roehll, A. M., Pionke, J. J., & Anderson Steeves, E. (2020). Understanding the intersection of race/ethnicity, socioeconomic status, and geographic location: A scoping review of U.S. consumer food purchasing. *International Journal of*

Environmental Research and Public Health, *17*(20), Article 20. https://doi.org/10.3390/ijerph17207677

49. Janda, K. M., Salvo, D., Ranjit, N., Hoelscher, D. M., Nielsen, A., Lemoine, P., Casnovsky, J., & van den Berg, A. (2022). Who shops at their nearest grocery store? A cross-sectional exploration of disparities in geographic food access among a low-income, racially/ethnically diverse cohort in central Texas. *Journal of Hunger & Environmental Nutrition*. https://doi.org/10.1080/19320248.2022.2128962

50. Meijer. (2024). *Meijer Community—Local Products*. Meijer Community. https://meijercommunity.com/local-products

51. Publix. (2024). *Local Produce*. Publix Super Markets. https://www.publix.com/products-services/produce/grown-close-to-home

52. The Kroger Co. (2023). *Kroger Pledges to Increase Shelf Space Dedicated to Local Products [press release]*. https://www.prnewswire.com/news-releases/kroger-pledges-to-increase-shelf-space-dedicated-to-local-products-301932090.html

53. Glanz, K., Fultz, A. K., Sallis, J. F., Clawson, M., McLaughlin, K. C., Green, S., & Saelens, B. E. (2023). Use of the Nutrition Environment Measures Survey: A Systematic Review. *American Journal of Preventive Medicine*, *65*(1), 131–142. https://doi.org/10.1016/j.amepre.2023.02.008

54. Bingham, D. R., Rushforth, R., Stevens, B., & Ruddell, B. (2022). Mapping local food self-sufficiency in the U.S. and the tradeoffs for food system diversity. *Applied Geography*, *143*, 102687. https://doi.org/10.1016/j.apgeog.2022.102687

55. Brune, S., Knollenberg, W., Barbieri, C., & Stevenson, K. (2023). Towards a unified definition of local food. *Journal of Rural Studies*, *103*, 103135. https://doi.org/10.1016/j.jrurstud.2023.103135

56. McCallum, D., Campbell, A. M., & MacRae, R. (2014). Can large retailers localize supply chains? A case analysis of the challenges facing one Canadian retailer. *Journal of Agriculture, Food Systems, and Community Development*, *4*(2), 163–176. http://dx.doi.org/10.5304/jafscd.2014.042.015

57. Granheim, S. I., Løvhaug, A. L., Terragni, L., Torheim, L. E., & Thurston, M. (2022). Mapping the digital food environment: A systematic scoping review. *Obesity Reviews*, *23*(1), e13356. https://doi.org/10.1111/obr.13356

58. Maganja, D., Miller, M., Trieu, K., Scapin, T., Cameron, A., & Wu, J. H. Y. (2022). Evidence gaps in assessments of the healthiness of online supermarkets highlight the need for new monitoring tools: A systematic review. *Current Atherosclerosis Reports*, *24*(4), 215–233. https://doi.org/10.1007/s11883-022-01004-y

59. Gardeazabal, A. (2023). *Responsible Digital Transformation in Agri- Food Systems: A Toolbox to Practically Address Key Identified Challenges* (pp. 1–21). CGIAR Initiative on Digital Innovation. https://cgspace.cgiar.org/server/api/core/bitstreams/cc97c47c-fa44-43ba-8033-7b112ecee2e1/content

60. Khandpur, N., Zatz, L. Y., Bleich, S. N., Taillie, L. S., Orr, J. A., Rimm, E. B., & Moran, A. J. (2020). Supermarkets in cyberspace: A conceptual framework to capture the influence of online food retail environments on consumer behavior. *International Journal of Environmental Research and Public Health*, *17*(22), Article 22. https://doi.org/10.3390/ijerph17228639

61. Headrick, G., Khandpur, N., Perez, C., Taillie, L. S., Bleich, S. N., Rimm, E. B., & Moran, A. (2022). Content analysis of online grocery retail policies and practices affecting healthy food access. *Journal of Nutrition Education and Behavior*, *54*(3), 219–229. https://doi.org/10.1016/j.jneb.2021.09.006

62. Moran, A. J., Headrick, G., Perez, C., Greatsinger, A., Taillie, L. S., Zatz, L., Bleich, S. N., Rimm, E. B., & Khandpur, N. (2022). Food marketing practices of major online grocery retailers in the United

States, 2019-2020. *Journal of the Academy of Nutrition and Dietetics*, *122*(12), 2295-2310.e2. https://doi.org/10.1016/j.jand.2022.04.003

63. Brennan, A., & Browne, S. (2021). Food waste and nutrition quality in the context of public health: A scoping review. *International Journal of Environmental Research and Public Health*, *18*(10). https://doi.org/10.3390/ijerph18105379

64. Conrad, Z., & Blackstone, N. T. (2021). Identifying the links between consumer food waste, nutrition, and environmental sustainability: A narrative review. *Nutrition Reviews*, *79*(3), 301–314. https://doi.org/10.1093/nutrit/nuaa035

65. U.S. Environmental Protection Agency. (2021). *From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste* (EPA 600-R21 171; pp. 1–113). United States Environmental Protection Agency. https://www.epa.gov/system/files/documents/2021-11/from-farm-to-kitchen-the-environmental-impacts-of-u.s.-food-waste_508-tagged.pdf

66. U.S. EPA. (2023). *United States Food Loss and Waste 2030 Champions*. United States Environmental Protection Agency. https://www.epa.gov/sustainable-management-food/united-states-food-loss-and-waste-2030-champions

67. Ludmir, C. (2023). *Food Waste Is Becoming Top Priority For Grocers—And They Are Trying To Get Shoppers Involved Too*. Forbes. https://www.forbes.com/sites/claraludmir/2023/08/30/food-waste-is-becoming-top-priority-for-grocersand-they-are-trying-to-get-shoppers-involved-too/

68. Mackay, S., Renker-Darby, A., Robinson, E., Shaw, G., & Sacks, G. (2022). Development of a proposed set of indicators for assessing food company commitments and practices regarding environmental sustainability. *Sustainability*, *14*(16), Article 16. https://doi.org/10.3390/su141610315

69. United States Environmental Protection Agency, O. (2023). *Wasted Food Scale*. Wasted Food Scale. https://www.epa.gov/sustainable-management-food/wasted-food-scale

70. The White House. (2024, February 27). *FACT SHEET: The Biden-Harris Administration Announces Nearly $1.7 Billion in New Commitments Cultivated Through the White House Challenge to End Hunger and Build Healthy Communities*. https://www.whitehouse.gov/briefing-room/statements-releases/2024/02/27/fact-sheet-the-biden-harris-administration-announces-nearly-1-7-billion-in-new-commitments-cultivated-through-the-white-house-challenge-to-end-hunger-and-build-healthy-communities/

71. The White House. (2022, September 28). *Fact Sheet. The Biden-Harris Administration announces more than $8 billion in new commitments as part of call to action for White House Conference on Hunger, Nutrition, and Health*. https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/28/fact-sheet-the-biden-harris-administration-announces-more-than-8-billion-in-new-commitments-as-part-of-call-to-action-for-white-house-conference-on-hunger-nutrition-and-health/

72. Redman, R. (2022). Grocery Industry Aligns Behind White House's Anti-Hunger Plan. *Supermarket News*. https://www.supermarketnews.com/issues-trends/grocery-industry-aligns-behind-white-house-s-anti-hunger-plan

Table 1. Number of Indicators that Align with National Strategy Calls to Action by BIA-Obesity Domain								
			BIA-Obesity Domain Brief Definitions [23] (number of indicators assessed)					
National Strategy Pillar	**National Strategy Call to Action** [5]		**Corporate Strategy (3)**	**Product Formulation[a] (14)**	**Nutrition Labeling (15)**	**Product and Brand Promotion (21)**	**Product Accessibility (13)**	**Relationships with Other Organizations (9)**
	ID Number	*Call to Action from the National Strategy* [5]	Existence and inclusion of specific targets for company commitment to population nutrition	Company commitment to own-brand product development and reformulation to reduce nutrients of concern	Company commitments for disclosure and labeling practices of nutrition information for in-store and online products	Company policies and commitments to reducing the promotion of less healthy foods to all consumers, and particularly children under age 18	Company policies and commitments for the availability and affordability of healthy foods compared with less healthy foods	How companies interact with and support external groups for population nutrition
Improve Food Access and Affordability	*1.1*	State, local, and territory governments should provide incentives and technical assistance to attract healthier food retail outlets to underserved areas, improve healthier food offerings in existing stores, and support year-round mobile produce markets in communities with limited food access.	3	14	0	3	11	9

	1.2	State, local, and territory governments should enact food waste reduction and recovery policies such as providing tax incentives to food donors.	1	0	0	0	0	5
	1.3	The private sector should invest in year-round mobile produce markets and retail outlets within underserved communities.	3	0	0	0	2	9
Integrate Nutrition and Health	*2.1*	States should collaborate with non-profit or community-based organizations to establish a state funded produce prescription program for low-income individuals and families.	3	0	1	1	0	9
	2.2	Health insurance companies should consider providing or expanding coverage of nutrition services, including produce prescriptions and/or medically tailored meals for target populations.	3	0	1	1	0	9
Empower All Consumers to Make and Have Access	*3.1*	States should provide nutrition incentives to Supplemental Nutrition Assistance Program participants to purchase healthy food such as	3	2	15	21	11	8

to Healthy Choices		increasing the purchasing power of Supplemental Nutrition Assistance Program beneficiaries at farmers markets, and encourage retailers to market more nutritious food in store and online.						
	3.3	Older Americans Act nutrition programs and Centers for Independent Living should expand creative service models by partnering with restaurants, grocery stores, food trucks, and local farmers to promote nutritious meals and use of locally sourced foods.	3	14	14	0	9	9
	3.4	Philanthropy should support pilots in underserved communities—including Tribal communities, rural, and Native Hawaiian communities—that boost local food systems as an economic driver in communities by fostering connections between farmers who are growing culturally appropriate food, food vendors, institutions,	0	0	0	0	0	9

		and community organizations.						
	3.5	The food industry should increase the availability of and access to foods that are low in sodium and added sugars—including foods meeting or exceeding the Food and Drug Administration's voluntary sodium reduction targets—and high in whole grains, particularly for the K-12 market	3	10	0	6	13	8
	3.6	Food retailers should hire registered dietitians to help provide nutrition information to consumers, redesign stores to more prominently place healthier choices, market and stock healthier items, and establish buying programs with local farms.	3	2	15	21	13	9
	3.7	Online grocery companies should redesign their search algorithms to ensure healthier products appear first and include ingredient and Nutrition Facts label information in an accessible manner for	3	0	15	16	6	9

		all food products sold online.						
Enhance Nutrition and Food Security Research	*5.1*	State, local, and territory governments should enter into data sharing agreements with universities, think tanks, food retailers, and other entities to provide administrative data about the use of food banks, participation in after-school sports, or development of Tribal traditional food systems.	0	2	5	2	2	9
	5.3	The private sector should invest in robust research and development focused on nutrition, equity, and health, including research on the microbiome, immunity, diabetes, and other chronic diseases and underserved populations.	3	14	1	0	0	9
	5.4	State and territory governments should support nutrition and food security research at universities and colleges, including Historically Black Colleges and Universities, Minority Serving Institutions, and Tribal Colleges and Universities.	0	0	0	0	0	9

	5.6	Universities, colleges, and academic medical centers should bolster hunger, nutrition, and physical activity research and data collection disaggregated by factors, including race, ethnicity, and other demographic and social factors.	0	0	0	5	0	9
	[a]Own- brand products only; own-brand products are those sold under the brand name of the retailer, e.g. Private Selection brand sold at Kroger							