

The Need to Incorporate Diversity, Equity, and Inclusion: Reflections from a National Initiative Measuring Fruit and Vegetable Intake



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DIETARY PATTERNS THAT INCLUDE FRUITS AND vegetables (F/V) greatly reduce chronic disease risk, but 90% of all adults in the United States do not consume enough F/V.¹ Further, long-standing systemic inequities that produce multiple barriers have contributed to low F/V intake (F/VI) among individuals who report low-income or belong to a racial and/or ethnic minority group.^{2–5} Subsequently, these populations are less likely to meet recommended levels of F/VI and tend to have higher rates of food insecurity, or a lack of ability to access safe, nutritious, and affordable food.^{2–5}

Multiple interventions have been implemented to address disparities in F/VI, including policy, systems, and environmental approaches that aim to reduce food access barriers. Research has been conducted to assess the influence of such interventions on F/VI using various measures. Unfortunately, assessment of F/VI does not typically incorporate measures or methods that expose systematic inequities across populations. Issues of diversity (differences between individuals and groups), equity (equal access to opportunities and resources), and inclusion (ensuring all individuals and groups are included) are paramount to assess F/VI.^{6–9}

This commentary draws upon experience from the US Department of Agriculture (USDA) National Institute of Food and Agriculture Gus Schumacher Nutrition Incentive Program's (GusNIP) National Training, Technical Assistance, Evaluation, and Information Center (NTAE)^{10,11} to account for diversity, equity, and inclusion (DEI) in shared measures that include F/VI. The challenges and solutions that arose provide the basis for recommendations that researchers and evaluators can apply when developing, revising, and/or

implementing additional or complementary measures that incorporate DEI.

FOUNDATIONS OF GusNIP FUNDING

Given that affordability is the greatest barrier to F/VI among low-income populations, financial incentives have been suggested as one policy lever to subsidize the purchase of F/V and ultimately improve dietary quality by increasing F/VI. The USDA National Institute of Food and Agriculture GusNIP and its predecessor, the Food Insecurity Nutrition Incentive Program (FINI), are the largest sources of federal funding to date (offered through competitive grants) to support financial incentives for F/V purchases.¹¹ The 2014 farm bill funded the USDA FINI mechanism to award projects that aimed at increasing purchase of F/V among Supplemental Nutrition Assistance Program (SNAP) participants. FINI was renamed GusNIP in 2018 when it was funded through the 2018 farm bill to support nutrition incentive and produce prescription projects that provide financial incentives for F/V purchases among low-income consumers. GusNIP funding was recently bolstered with funding from the Emergency Coronavirus Relief Act of 2021.

GusNIP grantees range in scale, maturity, and capacity from small nonprofit organizations to larger statewide agencies. GusNIP-funded projects partner with farm-direct (eg, farmers' markets, farm stands, community supported agriculture, and mobile markets) and brick-and-mortar sites (eg, grocery stores and corner stores) to strengthen access to healthy foods and help families bring home more F/V while supporting American farmers, agricultural communities, and local economies.

Four types of GusNIP projects are awarded: pilot, mid-scale nutrition incentive, large-scale nutrition incentive, and produce prescription. In 2019, 22 grantees implemented nutrition incentive or produce prescription projects in 17 states and the District of Columbia. In 2020, 20 grantees implemented nutrition incentive or produce prescription projects in 20 states and the District of Columbia.

GAPS IN EVIDENCE ABOUT THE INFLUENCE OF FEDERALLY FUNDED FINANCIAL INCENTIVES ON F/V INTAKE

Significant gaps in the evidence exist that describe the influence of federally funded financial incentive programs for F/Vs on F/VI and other key outcomes. Directives to evaluate financial incentives were first authorized in the 2008 farm bill through the USDA Healthy Incentives Pilot Program.¹²

Through a randomized controlled trial design, The Healthy Incentives Pilot Program showed that SNAP participants receiving financial incentives (ie, treatment group) consumed more F/V than SNAP participants receiving no financial incentives (ie, control group).¹³

Following authorization of the 2014 farm bill, a required evaluation of FINI found no statistically significant change in F/VI.¹⁴ However, research design and program implementation issues may have attenuated effects that should be considered when interpreting null findings. Specifically, the targeted treatment group consisted of participating SNAP households located near FINI project redemption sites, although these households may not have visited the retail outlets that provided FINI-funded financial incentives or participated in the nutrition incentive project. One likely driver of these results was the relatively low level of awareness and use of financial incentives among SNAP participants in the treatment group.¹⁴

In the 2018 farm bill, funds were allocated to create the NTAE to support GusNIP grantees in reporting, evaluation, and technical assistance from 2019 until 2023. With dedicated support for evaluation, one main question that will be addressed is, How does GusNIP influence F/VI among low-income consumers?¹⁵ To answer this question, the NTAE supports grantees in the collection of shared measures to understand the collective influence of financial incentives for F/V purchases across projects.¹⁵ The NTAE will aggregate data across the GusNIP grantees to generate a data set that will contribute to efforts to answer questions about the shared influence across all GusNIP projects.¹⁵

SELECTION OF GusNIP's SHARED MEASURES TO EVALUATE F/VI

To select the best abbreviated measure that specifically assesses F/VI, the NTAE focused the review and selection on existing F/V screeners that are short, self-administered instruments that reduce participant and evaluator burden and evaluate F/VI either by frequency of intake or the number of cups or servings consumed each day. The NTAE examined use of these measures across previously established projects (eg, Healthy Incentives Pilot Program and FINI)¹⁶ and conducted a literature search in 2019 and 2020 (unpublished data). The NTAE narrowed selection to a small set of F/V screeners that were tested among low-income populations, including dietary screeners within the Dietary Screener Questionnaire (DSQ),¹⁷ National Health Interview Survey Cancer Control Supplements,¹⁸ National Institutes of Health All Day Screener or By Meal Screener,¹⁹ the California Health Interview Survey,²⁰ and others.²¹ The F/V screeners were assessed for their ability to compare with other surveillance efforts, the capacity of GusNIP grantees and their partners to administer the screener, data needs of policymakers and other relevant stakeholders, ability to minimize participant burden, and the scientific validity and reliability of the various F/V screeners.¹⁶

Weighing the various considerations, the DSQ F/V screener that was selected as the shared measure for GusNIP grantees was the DSQ (questions are published elsewhere).²² The 10-item DSQ FV Screener collects individual consumption frequency of fruit, fruit juice, salad, fried potatoes, other potatoes, dried beans, other vegetables, tomato sauce, salsa, pizza during the past 30 days. The FV Screener is a part of the

larger 26-item DSQ developed by the National Cancer Institute. It was chosen because it was validated, tested among low-income and racial and ethnic minority groups in other studies, can be self-administered, and does not require participants to report serving size, which can be challenging, even for people with high numeracy skill.^{17,21,23,24} Alongside the DSQ, an algorithm can be applied to calculate F/V cup-equivalents.¹⁷ Unlike other shorter dietary instruments, the DSQ is sensitive to change with relatively small changes in F/VI.^{17,21,24}

Notably, the DSQ was originally validated in a nationally representative sample in the National Health and Nutrition Examination Survey 2009–2010.¹⁷ The National Health and Nutrition Examination Survey sample is designed to be nationally representative, does not necessarily capture the dietary habits of subpopulations, and collects cisgender designations.

Grantees work with a program advisor to tailor a set of shared measures, which includes the DSQ FV Screener, to fit their project activities and populations. GusNIP nutrition incentive project grantees are required to conduct a tailorable survey using a repeated cross-sectional design.²⁵ Nutrition incentive projects increase value of SNAP benefits at point of sale often by providing incentives such as doubling the value of SNAP dollars when spent on F/V. Produce prescription project grantees are required to conduct a tailorable survey using a longitudinal design assessed at pre- and post-project.²⁶ These grantees typically partner with health care professionals to prescribe F/V for patients experiencing food insecurity and often chronic disease condition (eg, type 2 diabetes).

Grantees are provided support by the NTAE to meet the requirements of reporting and evaluation. Support includes providing grantees with shared measures and survey software, guidance through the institutional review board process, research training videos, one-on-one advising, data analysis, webinars, communities of practice, reporting and evaluation resources, and connections to technical assistance and other grantees.¹⁰

CHALLENGES OF ASSESSING F/VI WITH A DEI LENS

During the first year of the NTAE, an introduction about the role of a DEI lens into all GusNIP research and evaluation was developed and published.⁹ At the same time, feedback from GusNIP grantees, grantee's partners that included external evaluators, and the research team reflected the need for a tailorable survey that captures F/VI, reflects diversity, is inclusive, and considers equity related issues of the participant population.^{25,26} The noteworthy input prompted the NTAE to initiate a process to internally document requests and observations about issues of DEI, assess measures internally, and revise data collection tools and strategies. From this documentation, key challenges to assessing F/VI with a DEI lens were identified within NTAE's tailored survey that utilizes the DSQ FV Screener that may be applicable to other dietary assessment tools.

Obtaining cup-equivalents of daily F/VI is important to assess whether or not GusNIP program participants meet the Dietary Guidelines for Americans recommendations.²⁷ The DSQ FV Screener scoring algorithms convert frequency responses that are paired with sex- and age-specific portion

sizes to cup-equivalent estimates of average daily F/VI.¹⁴ Several requests to the NTAE were made from GusNIP grantees and their evaluation partners to the NTAE to offer the ability to expand the sex question to include broader identities of nonbinary, third gender, self-describe, or prefer not to answer options (multiple GusNIP grantees, e-mail and oral communications, December 2019 to May 2020). The non-cisgender response variables have now been included within the sociodemographic portion of the shared measures and NTAE is working to ensure the DSQ FV Screener algorithm will calculate F/VI data for non-cisgender responses for the comprehensive evaluation of data collected from 2019 to 2023. In the meantime, the frequency of the non-cisgender responses and categorical results of DSQ FV Screener are reported alongside outcome data. NTAE also broadly offers “Don’t know” or “Prefer not to answer” response options to allow participants to options to maintain privacy.

GusNIP grantees work with diverse populations from a variety of cultural, ethnic, and racial identities that consume F/V reflective of varying food cultures and traditions. As a result, multiple grantees expressed the need for additional racial and ethnic groups (eg, Middle Eastern or North African) to be included in the survey alongside the DSQ FV Screener (multiple GusNIP grantees, e-mail and oral communications, December 2019 to May 2020). In addition, examples of foods assessed in the DSQ FV Screener do not always adequately reflect F/V dietary patterns of the communities being surveyed. Many grantees have requested the ability to provide or switch examples in the DSQ FV Screener to be more reflective of the F/V dietary patterns of their communities (multiple GusNIP grantees, e-mail and oral communications, December 2019 to May 2020). Requests were made to include berries as an example food in the fruit category because the other fruit examples listed were not commonly consumed by participating cultures as a norm, but berries were (multiple GusNIP grantees, e-mail and oral communications, December 2019 to May 2020). Similar requests have been made for a variety of example foods from other grantees. NTAE made modifications to example foods as requested and will analyze the influence of these differences between the subsample that made changes compared with surveys with no modifications in the general sample. In another instance, one of the items on the DSQ FV Screener queries about consumption of “Mexican-type salsa with tomato,” which was flagged as potentially offensive, stigmatizing, or unfamiliar to survey participants. The NTAE removed “Mexican-type” from all surveys for this question (multiple GusNIP grantees, e-mail and oral communications, December 2019 to May 2020).

Requests have also been made to translate the full survey (DSQ FV Screener and other shared measures) into 30 languages, yet the DSQ has not been validated for use in all these languages except for Spanish (multiple GusNIP grantees, e-mail and oral communications, December 2019 to January 2021).¹⁶ Nuances in language exist and cross-cultural validation is extremely important to ensure comprehension. Some indigenous languages do not translate well to the written word and some terms do not mean the same thing or do not translate across languages or even within the same language associated with different cultures or dialects (eg, Spanish). The NTAE recommends that surveys are translated before collecting data (multiple GusNIP grantees, e-mail and oral communications, December 2019 to January 2021). NTAE

has directly supported the translation of the survey into three languages by working with appropriate translators. The NTAE has also provided guidance to grantees about translation processes for other languages and field testing the translated survey with their participants.

Other grantees requested instruments that assess equity factors that influence F/VI and could be paired with the DSQ FV Screener (multiple GusNIP grantees, e-mail and oral communications, December 2019 to January 2021). For example, discrimination, stigma, low or no employment, or civic power can influence F/VI. The unequal power dynamics that many participants face in accessing F/V in their community is a salient theme made clear based on the evidence collected from grantees and their diverse participants. The NTAE has developed several optional measures, such as food access, food sovereignty, hunger coping, and tradeoff behaviors, for grantees to include in their survey that address factors that influence F/VI and intersect with DEI.²⁸

Approaching measurement of F/VI without a DEI lens may lead to bias or errors in data collected that may skew the results. For example, in the case that surveys are only provided in English, non-native English speakers may misinterpret the F/V items and provide a response that would be different in the case that the question was better understood. On a large scale, such situations can lead to data that are not valid or reliable and result in reports of increased F/VI when it has decreased (false positive) or decreased F/VI when it has increased (false negative).²⁹ Measuring accurate increases and decreases in F/VI among subpopulations that encounter dietary disparities is paramount to tailoring programming and interventions.²⁹

OPPORTUNITIES FOR ASSESSING FV/I WITH A DEI LENS

The issues that arose with the selection of the DSQ FV Screener has motivated the NTAE to recognize a tension that exists in the selection of shared measures to create an aggregate data set that adequately assesses the influence of financial incentives on F/VI and concurrently captures the influence of the GusNIP on the lived experience across participants. Failing to approach measurement of F/VI with a DEI lens is a harbinger for the potential to miss key factors that may influence outcomes. A similar process can be applied within large-scale interventions or initiatives utilizing other shared measures to ensure issues of DEI are reflected when assessing F/VI.

Dynamic measurement of F/VI with a DEI lens has the potential to inform program design and implementation depicting results that accurately portray causes and consequences of F/VI, and effectively influence the breadth and depth of food security among participating populations. The GusNIP NTAE responded to input, internally documented requests and observations from two years of data collection with the DSQ FV Screener, consulted with experts about how to resolve, and reviewed the dietary intake literature in consideration of DEI.⁹ This process resulted in the identification of opportunities for all research and evaluation experts in food and nutrition to consider when developing, revising, and/or implementing additional or complementary measures of FVI to address issues of DEI, which include:

- Pair quantitative F/VI data with qualitative data to provide context to develop more meaningful results and develop a strategy to better serve all participating populations;
- Create and implement clear statistical methods and algorithm approaches that are inclusive of non-cisgender identification;
- Allow for “Don’t know” or “Prefer not to answer” response options;
- Ensure the ability to report a variety of racial and ethnic identities;
- Develop measures that provide example foods that are interchangeable for a variety of food cultures and traditions and then are tested for validity and reliability;
- Incorporate new F/V categories and types when relevant;
- Instruct about valid language translation strategies that address languages that rely on spoken words and not written languages;
- Include directions for cross-cultural validation of translations across and within languages associated with several cultures;
- Avoid stigmatizing language when naming foods;
- Implement qualitative assessment about preferences, issues, and practices related to DEI factors;
- Utilize validated tools that measure DEI issues that influence F/VI; and
- Undertake the substantial task of validating the measure and updating any algorithms or analytical tools to respond to changes.

CONCLUSIONS

It is vital that assessment of FVI across populations accounts for DEI to understand program influence on healthy diets, food security, and prevention of diet-related chronic diseases. To appropriately address the dietary-related disparities that have existed for decades, research and evaluation experts in food and nutrition should take steps now toward the assessment of F/VI with a DEI lens. Ensuring the voices of affected populations are included in F/VI assessment highlights and increases the relevance of DEI related issues so that findings can be applied to efforts to decrease systemic inequities across the food system.

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