GLOBAL DIET QUALITY SCORE MEAL AND MENU METRIC TOOLKIT

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About *Intake*

Intake is a Center for Dietary Assessment at FHI 360, established in 2016 with funding from the Gates Foundation. *Intake* aims to strengthen policies and programs to improve nutritional status in low- and middle-income countries (LMICs) by increasing the availability, quality, comparability, and use of dietary data. *Intake* provides flexible, on-demand technical assistance to governments for collecting, analyzing, and using dietary intake data for evidence-based decision-making in LMICs; develops tools and technologies to facilitate dietary data collection and analysis; and carries out research to advance dietary assessment methods and develop validated metrics of diet quality.

In 2022, *Intake* began receiving additional funding from the Rockefeller Foundation to develop tools, technologies, and metrics for measuring the nutritional quality of meals and menus served by institutional feeding programs, such as school meal programs; and to provide related technical support for use of these tools.

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BACKGROUND[1]

The food system is currently not meeting the needs of people or the planet.

Sub-optimal diets are one of the leading causes of both child and adult mortality, one in three people are malnourished globally, and a third of greenhouse gases come from the food system alone (Crippa et al., 2021; FAO 2024; GBD, 2019).

Creative solutions are essential to achieving equitable, sustainable, and nutritious food systems and to overcome current - and future - public health and planetary challenges. Institutional meal programs, and especially school meals, have been put forward as a potential way of addressing these entrenched problems.

Institutional meal programs have a far reach and could have positive impacts across the food system if strategic procurement decisions were made based on a triple bottom line balancing nutritional quality, planetary health, and economic cost.

People across all stages of life and from a variety of backgrounds eat food that is sourced through institutional food purchasing, for example:

- Approximately 418 million children around the world benefit from school meals (WFP, 2022).
- More than 9 million children live in institution-based care (e.g., orphanages) worldwide (DeLacey et al., 2022) and are typically served at least two meals every day of the year.
- Many hospitals in the world procure food and serve meals to inpatients multiple times every day.

1 The text in this Background section has been adapted from Bell et al. (2025), “The Global Diet Quality Score (GDQS) Meal and Menu Metrics: How to Measure Meal and Menu Quality in Institutional Feeding Programs” available at: https://academic.oup.com/nutritionreviews/article/83/Supplement_1/81/8154111

- Prison inmates are provided with a fixed breakfast, lunch, and dinner every day of the year in most countries. In the US alone, the number of inmates totals over one million individuals, which amounts to more than three million meals procured and served every day by the US correctional system (Bureau of Justice Statistics, 2023).
- Airlines shuttle millions of passengers each day and serve breakfast, lunch, and/or dinner in-flight.
- More people than ever before work in offices all around the world and companies often have cafeterias that, in total, sell food to millions of employees every day.

There is no global estimate of the total number of people benefiting from one (or more) of these institutional meal programs daily, however, the scale of institutional meal programs offers a unique platform to generate far-reaching impacts for the health of people and the planet.

Why focus on school meals

Within the realm of institutional meal programs, a natural entry point is school meal programs. School meal programs are one of the largest social safety nets worldwide and operate in almost every country. Approximately 41 percent of children enrolled in primary school globally have access to free or subsidized meals daily (WFP, 2022).

School meal programs can provide a non-trivial contribution to overall diet quality, particularly in contexts where the school meal makes up a significant portion of energy and nutrients, as is often the case with school meals in low- and middle-income countries and other low resource settings. School feeding has been shown to result in increased school enrollment, attendance, educational achievement, and cognitive performance; better diet quality and food security; and improved height and weight (Aurino et al., 2020; Cohen et al., 2021; Bundy et al., 2013; Gelli et al., 2015; Wang et al., 2021).

Beyond the individual health benefits, when foods procured for schools and other institutional meal programs are nutritious and grown using sustainable and regenerative agricultural practices, there is the potential of shifting the broader food system with better outcomes for people and the planet.

The GQDS Meal and Menu metrics

Despite the wide reach of school meal programs, as well as various other institutional feeding programs, the nutritional quality of the meals served is rarely monitored or evaluated in a comparable way globally. This lack of measurement has made it hard to track and evaluate the quality of meals served, as well as to ensure consistent and rigorous measurement of the impacts of school meals. One of the reasons for this lack of measurement has been due to the absence of standardized and easy-to-use metrics.

Until recently most conventional dietary metrics have focused on capturing population intake over the course of a 24-hour period (e.g., dietary surveys). The few existing metrics that have been developed to measure consumption in units smaller than one day have tended to either be very simple and not optimally suited for providing detailed information about the quality of the meal; or very complex, with limited feasibility, thereby prohibiting widescale uptake and use (Gorgulho et al., 2016; Bullock et al., 2021; GAIN, 2024; Poinsot et al., 2023). To address this gap, the *Intake* – Center for Dietary Assessment at FHI 360, in collaboration with the Rockefeller Foundation, developed the Global Diet Quality Score (GDQS) Meal and Menu metrics.

The GDQS Meal and Menu metrics allow for measurement of the overall nutritional quality of the meal or menu, while also providing actionable data related to the inclusion of healthy foods, unhealthy foods, fortified and biofortified foods, and food group diversity. Leveraging data from the GDQS Meal and Menu metrics for decision-making helps to ensure that healthy and nutritious meals are served and has the potential to contribute to positive and lasting impacts across the food system. Collecting and tabulating the metrics is straightforward with the GDQS Meal and Menu Excel Tabulation Tool. To complement this Tool and better support data collection in the field, *Intake* has also developed an app to allow for a more streamlined and portable data collection experience on phones, tablets, and computers (online and offline).

This GDQS Meal and Menu Metric Toolkit was developed as part of *Intake*'s overall effort to ensure the easy adoption of the GDQS Meal and Menu metrics for potential users. The Toolkit is divided into four main sections:

- A Primer
- Policy Brief for Decision-Makers
- Talking Points for School Meal Advocates
- Links to Learn More

The GDQS Meal and Menu Toolkit will be expanded with the inclusion of additional sections in a later version.

A PRIMER

Introduction

Creating a more equitable, environmentally sustainable, and nutritious food system is a crucial global challenge. Identifying effective levers to create change is essential to shift the food system to achieve long-term health for both people and the planet. One potential lever that can help realize this change is through institutional meal programs (e.g., schools).

Despite the wide reach of various institutional meal programs, until recently, there has not been an easy-to-use metric to measure the nutritional quality of meals and menus that are planned, prepared, or served. To address this gap, the *Intake* – Center for Dietary Assessment at FHI 360, in collaboration with the Rockefeller Foundation, developed the GDQS Meal and Menu metrics (Bell et al., 2025). This primer provides information on what the GDQS Meal and Menu metrics are, their specific measurement attributes, and how they can be used and interpreted.

Why focus on school meals?

School meal programs are one of the largest social safety nets worldwide and operate in almost every country. Approximately 41 percent of children enrolled in primary school globally have access to free or subsidized meals daily (WFP, 2022). School feeding has been shown to result in increased school enrollment, attendance, educational achievement, and cognitive performance; better diet quality and food security; and improved height and weight (Aurino et al., 2020; Cohen et al., 2021; Bundy et al., 2013; Gelli et al., 2015; Wang et al., 2021).

Furthermore, school meal programs have been shown to have intergenerational nutritional benefits. For example, in India, the mid-day meal program – the largest school meal program globally – was associated with a 13-32% improvement in the height-for-age z-scores of children born to mothers who received the mid-day meal based on longitudinal data from 2006-2016 (Chakrabarti et al., 2021). Beyond the individual health benefits, when foods procured for schools and other institutional meal programs are nutritious, there is the possibility of affecting the broader food system by motivating systemic change on the production side.

Despite the potential impact of school meal programs, the nutritional quality of the meals is rarely monitored or evaluated in a globally comparable way. One of the reasons for this has been the absence of standardized and easy-to-use metrics designed to measure the nutritional quality of meals. The few metrics that have been developed to assess the quality of meals tend to be either too simple to provide detailed information about the nutritional quality of the meal or very complex with limited feasibility for routine data collection, thereby prohibiting widescale uptake and use (Gorgulho et al., 2016; Bullock et al., 2021; GAIN; Poinsot et al., 2023).

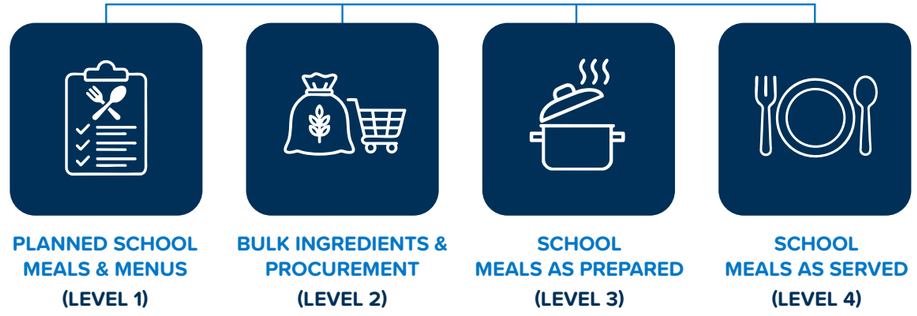
Measuring the nutritional quality of meals and menus: The GDQS Meal and Menu metrics

Effectively measuring the nutritional quality of meals and menus in schools in a systematic and globally standardized way is crucial given the important contribution of school meals to students' overall diets. This is particularly true in contexts where school meals may contribute a significant portion of energy and nutrient intake, as is often the case in low-resource settings.

Information on school meals can be collected at several different entry points along the school meal data value chain to assess the nutritional quality of school meals that are planned, prepared, or served; and how the nutritional quality of meals that are ultimately served may differ from those that are planned and/or prepared (Figure 1).

Using the GDQS Meal and Menu metrics at the planning stage (Level 1) allows for an overall assessment of the nutritional quality of the planned meal. Measurement of the nutritional quality of bulk ingredients using procurement data (Level 2) can help identify opportunities for "quick wins" where certain bulk ingredients could be substituted with healthier, budget neutral alternatives. School meals can also be measured at the point of preparation (Level 3). This has the benefit of providing a measure of the nutritional quality of the meal as prepared in a centralized kitchen, by caterers, or in a kitchen at the school. Finally, there is the option to measure the nutritional quality of meals at the food service level (Level 4). This is the closest measure of what is consumed by a given student and presents the strongest measure for ongoing monitoring activities, impact evaluations, and for making comparisons between what is planned (Level 1) and what is actually served (Level 4) as a measure of program fidelity.

Figure 1. School meal data value chain



Understanding the components of GDQS Meal and Menu metrics

The GDQS Meal and Menu metrics use the same 25 food groups as the GDQS metric (Bromage et al., 2021), and are grouped in the following way: 16 healthy food groups that accrue points when present, seven unhealthy food groups that subtract points when present, and two food groups that are considered healthy in moderation (i.e., points are added) but are considered unhealthy when not present (i.e., points are subtracted) or when present in excess (i.e., points are subtracted) (Table 1). See Annex for more details on food groups, gram quantity thresholds, and point allocation.

Table 1. GDQS Meal and Menu Food Groups

Food Group Classification	Food Groups
Healthy food groups	Citrus fruits, Deep orange fruits, Other fruits, Dark green leafy vegetables, Cruciferous vegetables, Deep orange vegetables, Other vegetables, Legumes, Deep orange tubers, Nuts and seeds, Whole grains, Liquid oils, Fish and shellfish, Poultry and game meat, Low-fat dairy, and Eggs.
Unhealthy food groups	Processed meat, Refined grains and baked goods, Sweets and ice cream, Sugar-sweetened beverages, Juice, White roots and tubers, and Purchased deep fried foods.
Healthy in moderation but unhealthy when not present or in excess	High-fat dairy and Red meat.

The points from the 16 healthy food groups make up the Healthy GDQS+ Meal sub-metric. The points from the seven unhealthy food groups, along with the two food groups that are considered only healthy in moderation, combine to make up the Unhealthy GDQS– Meal sub-metric. The points from the Healthy GDQS+ Meal and Unhealthy GDQS- Meal sub-metrics sum to make the Base GDQS Meal metric.

The Fortification and Biofortification Meal sub-metric and the Food Group Diversity Meal sub-metric provide additional points that, when summed with the Healthy GDQS+ Meal sub-metric and Unhealthy GDQS- Meal sub-metric, provide the GDQS Meal score (Figure 2).

Figure 2. Components of the GDQS Meal metric

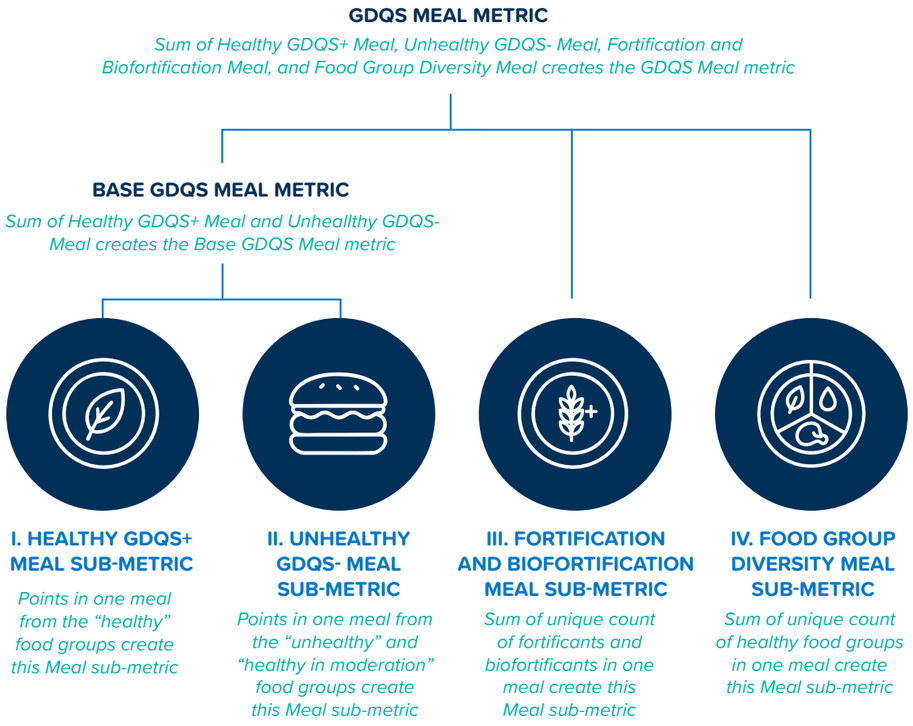
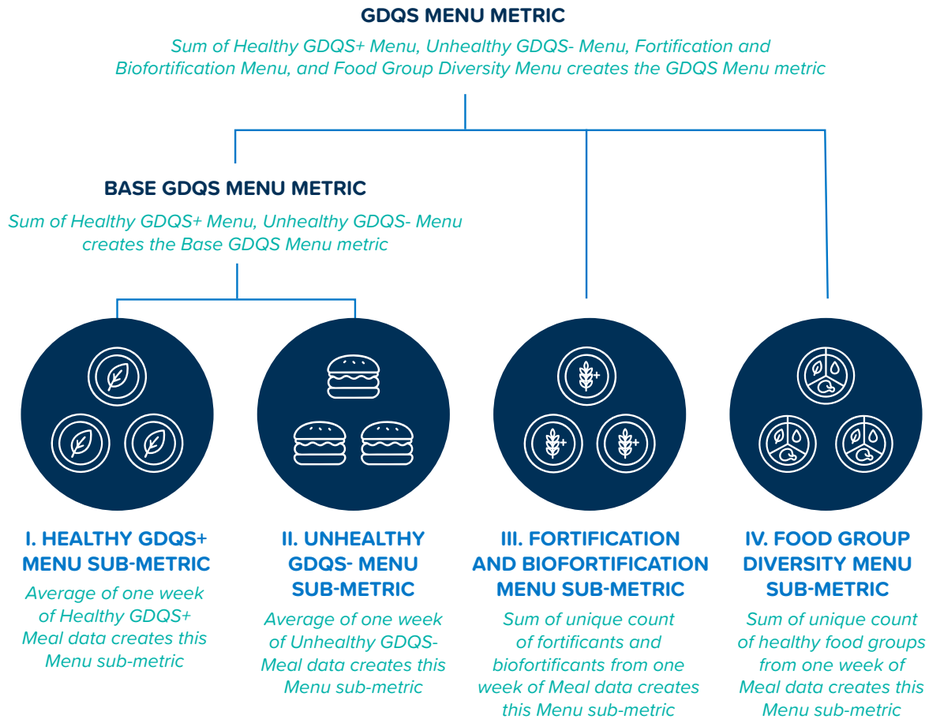


Figure 3. Components of the GDQS Menu metric



The GDQS Meal sub-metrics provide high level information on the main components within the metrics that contribute to the overall score. Furthermore, each sub-metric can be "unpacked" to identify the individual characteristics that are driving the score. For example, in the case of the Unhealthy GDQS- Meal sub-metric users can identify which unhealthy food groups are taking away from the overall score and could potentially be substituted with alternative foods from a healthy food group. In addition, users can drill down to identify which food items are included in each food group.

The GDQS Menu metric builds on the GDQS Meal metric by providing an aggregate score to summarize the meal quality served over a week (2-7 days, as defined by the user). To calculate the Base GDQS Menu metric, the average of the Healthy GDQS+ Meal sub-metric and the average of the Unhealthy GDQS− Meal sub-metric for a given week are summed. The Fortification and Biofortification Menu sub-metric is scored by counting the unique number of nutrients provided by fortification or biofortification for a given week; and the Food Group Diversity Menu sub-metric is scored by counting the unique number of healthy food groups for a given week. The score for the four sub-metrics (Healthy GDQS+ Menu, Unhealthy GDQS- Menu, Fortification and Biofortification Menu, and Food Group Diversity Menu), when summed, provides the GDQS Menu metric score (Figure 3).

Scoring system for the GDQS Meal and Menu metrics and sub-metrics

Raw scores for the Base GDQS Meal and Menu metrics range from 0-49 raw points, with up to 32 raw points accruing from the Healthy GDQS+ Meal or Menu sub-metric scores and up to 17 raw points accruing from the Unhealthy GDQS- Meal or Menu sub-metric scores. Additionally, up to 16 raw points can be gained from the Fortification and Biofortification Meal and Menu sub-metric scores[2] and up to 18 raw points can be gained from the Food Group Diversity Meal and Menu sub-metric scores[3]. The raw scores for the Total GDQS Meal and Menu metrics range from 0-83 raw points. For reporting and benchmarking purposes, all raw scores for the GDQS Meal and Menu metrics are translated into a scaled score that ranges from 0-100 (Table 2).

2 The following 16 micronutrients can receive points: Vitamin A, Vitamin C, Vitamin D, Vitamin E, Vitamin B1 (thiamine), Vitamin B2 (riboflavin), Vitamin B3 (niacin), Vitamin B5 (pantothenic acid), Vitamin B6 (pyridoxine), Vitamin B9 (folate), Vitamin B12 (cobalamin), Iron, Zinc, Calcium, Magnesium, and Iodine.

3 Points are awarded for the 16 healthy food groups and the two food groups (high-fat dairy and red meat) that are healthy when consumed in moderation.

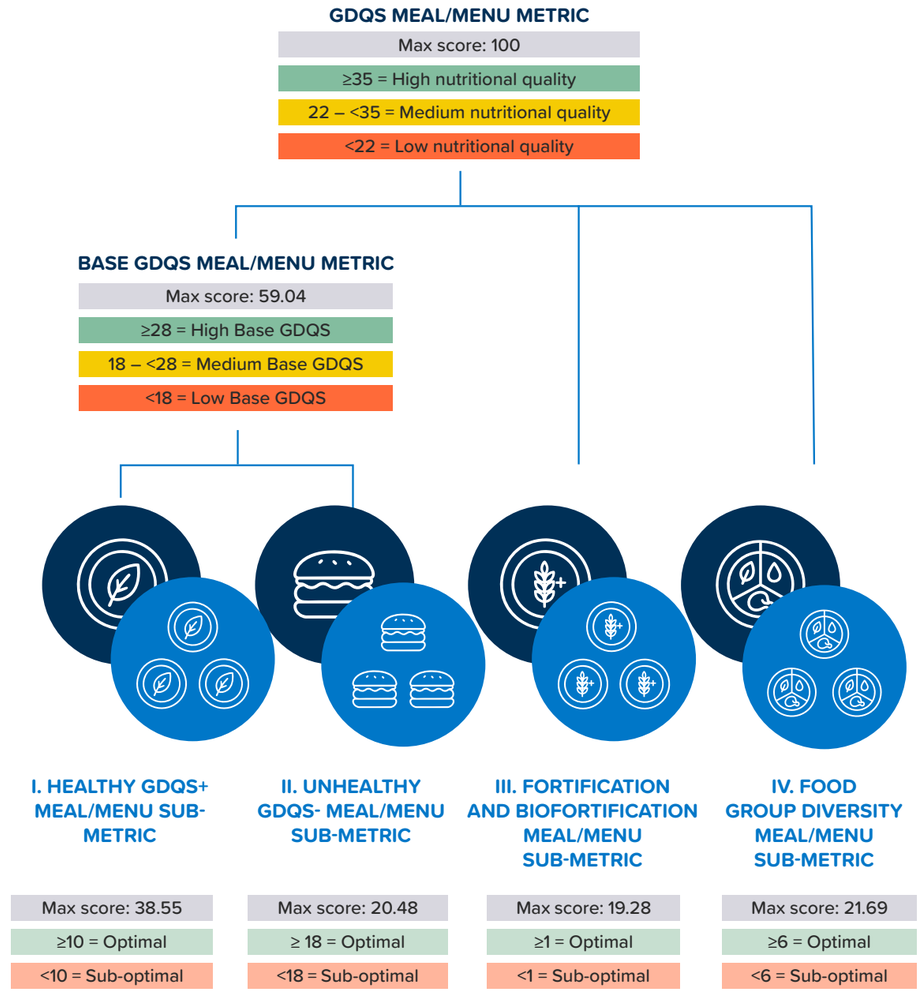
Table 2. Raw and scaled GDQS Meal and Menu metric and sub-metric scores

Metric	Max Raw Score	Max Scaled Score
GDQS Meal or Menu	83	100
Base GDQS Meal or Menu	49	59.04
Sub-metric		
Healthy GDQS+ Meal or Menu	32	38.55
Unhealthy GDQS- Meal or Menu	17	20.48
Fortification and biofortification GDQS Meal or Menu	16	19.28
Food group diversity GDQS Meal or Menu	18	21.69

Benchmarks for interpreting the GDQS Meal and Menu metrics and sub-metrics

The GDQS Meal and Menu metrics were designed to evaluate the nutritional quality of meals and menus. Recognizing that a healthy meal and menu can be arrived at in a multitude of ways, the GDQS Meal and Menu metrics were not designed to be prescriptive in terms of precisely what a healthy meal or menu constitutes. For this reason, when using the GDQS Meal and Menu metrics, the maximum number of points are never expected to be achieved. Higher GDQS Meal and Menu scores are indicative of higher contributions of a given meal or menu to an overall healthy diet.

Figure 4. GDQS Meal and Menu benchmarks for scaled scores



The GDQS Meal and Menu benchmarks provide users with a substantiated and objective measure by which to evaluate the quality of school meals and menus comparably over time, across schools, varied contexts, and different countries. The GDQS Meal and Menu metrics are tabulated using the following age groups: 24-59 months, 5-9 years, 10-14 years, and 15+ years, but the metrics and benchmarks are constructed to allow for aggregation of data across age groups.

The benchmarks for the GDQS Meal and Menu metrics were designed to allow users to easily identify whether the planned, prepared, or served meal or menu is of low, medium, or high nutritional value. Since GDQS Meal and Menu metric and sub-metric data are intended to be reported only after the data has been translated from the raw to scaled score, the benchmarks are shown in relation to the scaled scores (Figure 4).

Illustrative meals showing a range of GDQS Meal and Menu metric and sub-metric scores

To show how school meal data for the GDQS Meal and Menu metrics are scored and interpreted against the GDQS Meal and Menu benchmarks, scores for four school meals (combined into one menu) are shown in Table 3. These scores were tabulated for 5–9-year-olds.

Table 3. Illustrative results of GDQS Meal and Menu metric and sub-metric scaled scores

Meal day	Healthy GDQS+ Meal/ Menu sub-metric	Unhealthy GDQS- Meal/ Menu sub-metric	Fortification Biofortification sub-metric	Food Group Diversity sub-metric	GDQS Meal/ Menu metric
Meal 1	3	14	0	2	20
Meal 2	8	14	2	5	30
Meal 3	16	14	10	7	47
Meal 4	22	19	11	10	62
Menu (Meals 1-4)	12	16	11	11	50

Note: The Base GDQS Meal and Menu results are excluded for simplicity. All scored reported are scaled 0-100.

- High nutritional quality (≥35)
- Medium nutritional quality (22 - <35)
- Low nutritional quality (<22)
- Optimal sub-metric score
- Sub-optimal sub-metric score

Below is a summary of the four meals for which GDQS Meal and Menu scores are presented in Table 3. For detailed data on the foods, gram quantities, and food groups underlying these scores see Table 4.

- **Meal 1** presents the simplest, lowest scoring meal, which is composed of white rice, vegetable oil, tomato, and onions. No food in this meal is fortified or biofortified. This meal has a GDQS Meal score of 19.88 and is considered of low nutritional quality.
- **Meal 2** the meal is composed of white rice, vegetable oil, tomato, onions, kale leaves, and beans. In this meal, the vegetable oil is fortified with Vitamin A and the beans are biofortified with iron. This meal has a GDQS Meal score of 30.12, which places it in the medium nutritional quality category.
- **Meal 3** the meal is composed of white rice, vegetable oil, tomato, onions, kale leaves, beans, banana, and peanuts. In this meal, the vegetable oil is fortified with Vitamin A, the white rice is fortified with Vitamins B1, B2, B3, B5, B6, B9, and the beans are biofortified with iron. This meal has a GDQS Meal score of 46.87, which places it in the high nutritional quality category.
- **Meal 4** presents the most nutritious, highest scoring meal, which is composed of brown rice, vegetable oil, tomato, onions, spinach leaves, beans, banana, peanuts, and high-fat milk. In this meal, the vegetable oil is fortified with Vitamin A, the brown rice is fortified with Vitamins B1, B2, B3, B5, B6, B9, the high-fat milk is fortified with Vitamin D, and the beans are biofortified with iron. This meal has a GDQS Meal score of 61.91, which places it in the high nutritional quality category.

The different combinations of foods and food groups, with various additions of fortification and biofortification, across the four illustrative meals result in varied scores ranging from low to high nutritional quality. The GDQS Menu score provides a summary measure of the nutritional quality of the meals across the four days (Figure 5).

Figure 5. GDQS Meal and Menu scores for four illustrative meals

Note: Secondary Y-axis shows low/medium/high nutritional quality benchmark cut-offs for the GDQS Meal and Menu metrics.

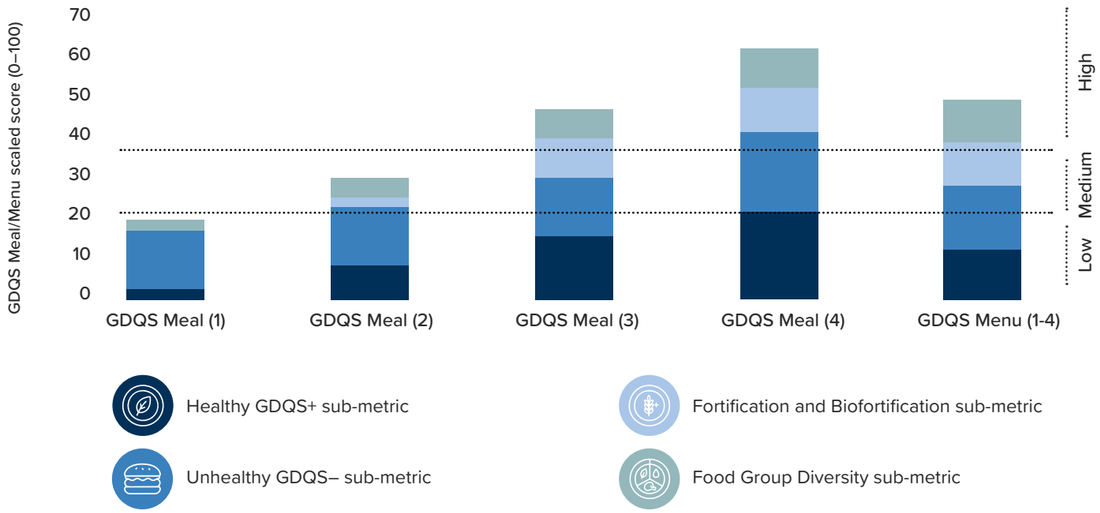


Table 4. Illustrative data for four school meals

	Food item served	Weight of food item served (gr)	GDQS food group
MEAL 1	Rice, White	200	Refined grains and baked goods
	Vegetable oil	10	Liquid oils
	Tomato	50	Other vegetables
	Onion (vegetable)	50	Other vegetables
MEAL 2	Rice, White	200	Refined grains and baked goods
	Vegetable oil[1]	10	Liquid oils
	Tomato	50	Other vegetables
	Onion (vegetable)	50	Other vegetables
	Kale (leaves)	50	Cruciferous vegetables
	Beans (not eaten with the pod)[2]	85	Legumes
MEAL 3	Rice, White[3]	200	Refined grains and baked goods
	Vegetable oil[1]	10	Liquid oils
	Tomato	50	Other vegetables
	Onion (vegetable)	50	Other vegetables
	Kale (leaves)	50	Cruciferous vegetables
	Beans (not eaten with the pod)[2]	85	Legumes
	Banana, Yellow or sweet	70	Other fruits
	Peanuts	30	Nuts and seeds
MEAL 4	Rice, Brown[3]	200	Whole grains
	Vegetable oil[1]	10	Liquid oils
	Tomato	50	Other vegetables
	Onion (vegetable)	50	Other vegetables
	Spinach leaves	50	Dark green leafy vegetables
	Beans (not eaten with the pod)[2]	85	Legumes
	Banana, Yellow or sweet	70	Other fruits
	Peanuts	30	Nuts and seeds
	Milk, Cow, High-fat[4]	100	High-fat dairy

1 Fortified with Vitamin A
2 Biofortified with Iron
3 Fortified with Vitamin B1 (thiamine), Vitamin B2 (riboflavin), Vitamin B3 (niacin), Vitamin B5 (pantothenic acid), Vitamin B6 (pyridoxine), Vitamin B9 (folate)
4 Fortified with Vitamin D

Collecting and tabulating the GDQS Meal and Menu metrics

The GDQS Meal and Menu metrics can be easily collected and tabulated using the GDQS Meal and Menu Excel Tabulation Tool developed by *Intake*. For data collection, users have the choice of reporting the amount served per student or the total amount planned or prepared. To tabulate the metrics, information on the specific type of food and the quantity used in the meal or menu is required. In cases where recipes or mixed dishes are part of the meal the individual ingredients must be entered. Also, information on the presence of any of the 16 micronutrients as fortificants or biofortificants is needed to award points for fortification and biofortification.

If you are interested in learning more about the GDQS Meal and Menu metrics, and the data collection and tabulation tools developed by *Intake*, please contact us at GDQS@FHI360.org.

When using the GDQS Meal and Menu Excel Tabulation Tool, the user simply selects the corresponding set of foods from the extensive GDQS food list containing over 7,000 items pre-classified into the GDQS food groups and enters the additional required information, as prompted by the tool. Once all required fields have been completed, with the press of a button, the GDQS Meal and Menu scores for the metrics and sub-metrics are automatically tabulated. The GDQS Meal and Menu Excel Tabulation Tool can be accessed by contacting *Intake* at GDQS@FHI360.org and requesting a copy.

A streamlined application (app) and web browser for future users to collect and tabulate data on phones, tablets, and computers, both offline and online has also been developed.

BEYOND MEASURING NUTRITIONAL QUALITY: EXTENDING THE USE OF THE GDQS MEAL AND MENU METRICS

Measuring the environmental impacts of meals and menus

Beyond measuring the nutritional quality of meals and menus, the GDQS Meal and Menu metrics can be expanded to measure environmental impacts across five domains (greenhouse gas emissions, water use, land use, eutrophication potential, biodiversity loss), by building on work that *Intake* has already carried out to compile a comprehensive database of the environmental impacts of foods across 145 countries and develop a suite of dietary environmental impact metrics for use across countries. By leveraging *Intake*'s work on measuring the environmental impacts of diets to bring an environmental impact component into the GDQS Meal and Menu metrics, we expect to unlock increased potential for data-informed action and inspire creative solutions, to help advance efforts to realize an equitable, environmentally sustainable, and nutritious food system for all.

Leveraging the GDQS Meal and Menu metrics for results-based financing

There is potential to leverage the standardized measurement provided by the GDQS Meal and Menu metrics to encourage results-based financing schemes for school meal programs. Efforts are underway to identify target measurement thresholds for institutional meal programs to strive towards. As the GDQS Meal and Menu metrics are expanded to include measurement of other key domains of interest (e.g., environmental impacts of foods included in meals and menus), the opportunity for use of the metrics in results-based financing initiatives may be even greater. For example, identifying meaningful targets for increasing the nutritional quality of school meals while also reducing their associated environmental impacts provides a promising opportunity for enacting a results-based accountability and financing mechanism, into which school meal programs can report their data and by which results-based donor investment can be guided. Within such an accountability and finance framework, there is potential to unlock wide-scale change to school meal procurement, and, in turn, long-standing impacts for the health of people and the planet.

POLICY BRIEF FOR DECISION-MAKERS

Why do we need to measure the nutritional quality of school meals and menus?

School meal programs have a far reach, and beyond providing healthy and nutritious meals to children, have the potential to have positive and lasting impacts across the food system if strategic procurement decisions are made based on a triple bottom line of nutritional quality, planetary health, and economic cost. However, within the school meal space, the historical standard has been to focus on coverage, therefore measurement efforts have tended to be oriented around reporting the number of students receiving meals.

In recent years, as interest in school meals has grown, the importance of measuring, monitoring, and documenting the provision of school meals has also expanded. With this transition has come an increasing interest in not only measuring the coverage of school meals, but also the nutritional quality of the meals themselves.

This is particularly important given the growing focus on school meals as an important piece of the puzzle for improving not only food security, but also diet quality, and overall nutrition and health.

Potential impacts expected when using the GDQS Meal and Menu metrics

Measuring the coverage of school meal programs is not enough. While the number of children receiving school meals is an important indicator, it does not provide information on the nutritional quality of the meals served, which is also of crucial importance.

Adoption of the GDQS Meal and Menu metrics - with effective use of the resulting data to inform actions - has potential for multiple positive impacts to be seen in your school setting, among children attending your school, and in your community and country, at large. These potential impacts, some of which are listed below, can be considered as key steps in a broader theory of change and can be actualized in different stages over time.

1 **Improving the nutritional quality of school meals:**
Using the GDQS Meal and Menu metrics quantify, in a standardized way, the nutritional quality of meals and menus. In turn, this allows for the identification of schools (or countries) that are performing very well and providing meals of high nutritional quality. Similarly, these metrics can help identify schools (or countries) that are underperforming with clear pathways for improvement since the metrics are designed to be “unpacked” down to the food item level. This level of knowledge arms decision makers with ample opportunities to identify ways to improve the nutritional quality of school meals in budget-neutral ways.

2 **Improving the nutrient intakes of students:**
Research has shown that school meals can results in increased school enrollment, attendance, educational achievement, and cognitive performance; better diet quality and food security; and improved height and weight (Aurino et al., 2020; Cohen et al., 2021; Bundy et al., 2013; Gelli et al., 2015; Wang et al., 2021). By providing meals of higher nutritional quality to students the potential of achieving far reaching benefits for the students from learning through overall health increases.

3 **Improving the agricultural sector and economic vibrancy in communities:**
With improvements to the nutritional quality of school meals, there will be more demand for procurement of healthy food options, in turn stimulating agricultural supply to meet the demand. This has the potential to improve agricultural systems as well as the communities where this work is taking place (e.g., agricultural producers and processors, SME caterers, food preparers at the school level etc.). Ultimately these changes could have system-wide impacts on the whole food system.

There is also the possibility in the future to extend the data collected for the GDQS Meal and Menu metrics to also report on the environmental impacts of meals and menus. With this information in hand, decision makers will be able to modify meals and menus to make improvements that reflect not only higher nutritional quality in school meals and menus, but also lower environmental impacts.

TALKING POINTS FOR SCHOOL MEAL ADVOCATES

- It is time to move beyond measuring the coverage of school meals. We must also measure the nutritional quality of school meals, which is critical to ensure that children are receiving food that helps them thrive.
- The GDQS Meal and Menu metrics offer an easy-to-use method for quantifying the nutritional quality of meals and menus that are planned, prepared, and served in institutional settings.
- The GDQS Meal and Menu metric data can be collected with *Intake*'s free and easy-to-use Excel Tabulation Tool.
- Data collected with the GDQS Meal and Menu Excel Tabulation Tool and streamlined app and web browser can be used for a variety of purposes, including:
  - » Country or institutional level assessment of meal and menu quality
  - » Tracking changes in nutritional quality of meals and menus over time
  - » Within and cross-country comparison of meal and menu quality
  - » Impact evaluations seeking to understand how the meal/menu quality changed due to various programs or policies (e.g., local procurement)
  - » Measurement of the bulk foods for institutional meal programs (e.g., at procurement)
  - » Measuring program fidelity by comparing planned meals/menus vs. served meals/menus
- Measurement and monitoring of the nutritional quality of school meals has the potential to serve as an entry point for broader food system change.

Annex. Gram thresholds used for different age groups and points for the Base GDQS Meal and Menu metrics[1]

	Gram Thresholds for Consumption Categories Scored for Each Food Group by Age																			
	Points Awarded in Tabulation				Children 24-59 months				Children 5-9 years				Children 10-14 years				Adults 15 years and older			
Consumption Category[2]	L	M	H	VH	L	M	H	VH	L	M	H	VH	L	M	H	VH	L	M	H	VH
GDQS Food Groups[3]																				
Healthy																				
Citrus fruits	0	1	2	NA	0	>0-39	>39	NA	< 14	14 - 39	> 39	NA	<24	24-69	>69	NA	<24	24-69	>69	NA
Deep orange fruits	0	1	2	NA	0	>0-71	>71	NA	< 14	14 - 103	> 103	NA	<25	25-123	>123	NA	<25	25-123	>123	NA
Other fruits	0	1	2	NA	0	>0-76	>76	NA	< 15	15 - 76	> 76	NA	<27	27-107	>107	NA	<27	27-107	>107	NA
Dark green leafy vegetables	0	2	4	NA	0	>0-23	>23	NA	< 7	7 - 23	> 23	NA	<13	13-37	>37	NA	<13	13-37	>37	NA
Cruciferous vegetables	0	0.25	0.5	NA	0	>0-22	>22	NA	< 7	7 - 22	> 22	NA	<13	13-36	>36	NA	<13	13-36	>36	NA
Deep orange vegetables	0	0.25	0.5	NA	0	>0-28	>28	NA	< 5	5 - 28	> 28	NA	<9	9-45	>45	NA	<9	9-45	>45	NA
Other vegetables	0	0.25	0.5	NA	0	>0-66	>66	NA	< 13	13 - 96	> 96	NA	<23	23-114	>114	NA	<23	23-114	>114	NA
Legumes	0	2	4	NA	0	>0-26	>26	NA	< 5	5 - 26	> 26	NA	<9	9-42	>42	NA	<9	9-42	>42	NA
Deep orange tubers	0	0.25	0.5	NA	0	>0-36	>36	NA	< 7	7 - 36	> 36	NA	<12	12-63	>63	NA	<12	12-63	>63	NA
Nuts and seeds	0	2	4	NA	0	>0-7	>7	NA	< 4	4 - 7	> 7	NA	<7	7-13	>13	NA	<7	7-13	>13	NA
Whole grains	0	1	2	NA	0	>0-8	>8	NA	< 4	4 - 8	> 8	NA	<8	8-13	>13	NA	<8	8-13	>13	NA
Liquid oils	0	1	2	NA	<1	1-4	>4	NA	< 1	1 - 5	> 5	NA	<2	2-7.5	>7.5	NA	<2	2-7.5	>7.5	NA
Fish and shellfish	0	1	2	NA	0	>0-40	>40	NA	< 8	8 - 40	> 40	NA	<14	14-71	>71	NA	<14	14-71	>71	NA
Poultry and game meat	0	1	2	NA	0	>0-27	>27	NA	< 9	9 - 27	> 27	NA	<16	16-44	>44	NA	<16	16-44	>44	NA
Low-fat dairy	0	1	2	NA	0	>0-93	>93	NA	< 19	19 - 93	> 93	NA	<33	33-132	>132	NA	<33	33-132	>132	NA
Eggs	0	1	2	NA	0	>0-20	>20	NA	< 3	3 - 20	> 20	NA	<6	6-32	>32	NA	<6	6-32	>32	NA
Unhealthy in Excessive Amounts																				
High-fat dairy[4]	0	1	2	0	0	>0-101	>101-734	> 734	< 20	20 - 101	> 101 - 734	> 734	<35	35-142	>142-734	> 734	<35	35-142	>142-734	> 734
Red meat	0	1	0	NA	0	>0-46	>46	NA	< 5	5 - 46	> 46	NA	<9	9-46	>46	NA	<9	9-46	>46	NA
Unhealthy																				
Processed meat	2	1	0	NA	0	>0-17	>17	NA	< 5	5 - 17	> 17	NA	<9	9-30	>30	NA	<9	9-30	>30	NA
Refined grains and baked goods	2	1	0	NA	0	>0-20	>20	NA	< 4	4 - 20	> 20	NA	<7	7-33	>33	NA	<7	7-33	>33	NA
Sweets and ice cream	2	1	0	NA	0	>0-23	>23	NA	< 7	7 - 23	> 23	NA	<13	13-37	>37	NA	<13	13-37	>37	NA
Sugar-sweetened beverages	2	1	0	NA	0	>0-104	>104	NA	< 35	35 - 150	> 150	NA	<57	57-180	>180	NA	<57	57-180	>180	NA
Juice	2	1	0	NA	0	>0-102	>102	NA	< 21	21 - 102	> 102	NA	<36	36-144	>144	NA	<36	36-144	>144	NA
White roots and tubers	2	1	0	NA	0	>0-76	>76	NA	< 15	15 - 76	> 76	NA	<27	27-107	>107	NA	<27	27-107	>107	NA
Purchased deep fried foods	2	1	0	NA	0	>0-25	>25	NA	< 5	5 - 25	> 25	NA	<9	9-45	>45	NA	<9	9-45	>45	NA

Notes:

[1]From Bell et al., 2025

[2]L = Low; M= Medium; H = High; VH = Very High

[3]For a description of the scientific basis for the operational definition of the GDQS food groups, refer to the Online Supplementary Material for Bromage et al., 2021.

[4]Hard cheese should be converted to milk equivalents using a conversion factor of 6.1 when calculating total consumption of high-fat dairy for the purpose of assigning a GDQS consumption category.

LINKS TO LEARN MORE

RESOURCES

Intake website: https://www.intake.org/

Intake innovations webpage: https://www.intake.org/innovations

GDQS Toolkit: https://www.intake.org/resource/global-diet-quality-score-gdqs-toolkit-1

Bell et al. (2025), "The Global Diet Quality Score (GDQS) Meal and Menu Metrics: How to Measure Meal and Menu Quality in Institutional Feeding Programs" available at: https://academic.oup.com/nutritionreviews/article/83/Supplement_1/81/8154111

CONTACT US:

Do you have questions about the GDQS Meal and Menu metrics?
Reach out to us at GDQS@FHI360.org

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REFERENCES

Aurino E, Gelli A, Adamba C, Osei-Akoto I, Alderman H. Food for thought? Experimental evidence on the learning impacts of a large-scale school feeding program. Journal of Human Resources. 2020;1019-10515R1. https://doi.org/10.3368/jhr.58.3.1019-10515R1

Bell W, Blakstad M, Milani P, and Deitchler M. The Global Diet Quality Score (GDQS)-Meal and Menu Metrics: How to Measure Meal and Menu Quality in Institutional Feeding Programs. Nutrition Reviews, 2025; 83(S1):81-92.

Bromage S, Batis C, Bhupathiraju SN, et al. Development and validation of a novel food-based Global Diet Quality Score (GDQS). Journal of Nutrition. 2021;151(Suppl 10):75S–92S

Bullock S.L., Miller H.M., Ammerman A.S., Viera A.J. Comparisons of four diet quality indexes to define a single meal healthfulness. Academy of Nutrition and Dietetics. 2021;122(1): 149-158.

Bundy D, Drake L, Burbano C. School food, politics, and child health. Public Health Nutrition. 2013;16: 1012–1019. https://doi.org/10.1017/S136898001200466

Bureau of Justice Statistics. Prisoners in 2021 – Statistical Tables. Prisoners in 2021 – Statistical Tables | Bureau of Justice Statistics (ojp.gov); 2022. Accessed August 7, 2023.

Chakrabarti S, Scott SP, Alderman H, Menon P, and Gilligan DO. Intergenerational nutrition benefits of India's national school feeding program. Nat Commun. 2021;12: 4248.

Cohen JFW, Hecht AA, McLoughlin GM, Turner L, Schwartz MB. Universal School Meals and Associations with Student Participation, Attendance, Academic Performance, Diet Quality, Food Security, and Body Mass Index: A Systematic Review. Nutrients. 2021;13:911.

Crippa M, Solazzo E, Guizzardi D, Monforti-Ferrario F, Tubiello FN, & Leip A. Food systems are responsible for a third of global anthropogenic GHG emissions. Nature Food. 2021;2:198–209. 2021.

DeLacey E, Allen E, Tann C, et al. Feeding practices of children within institution-based care: A retrospective analysis of surveillance data. Maternal & child nutrition. 2022;18(3), e13352.

FAO, IFAD, UNICEF, WFP and WHO. *The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms*. 2024. Rome.

GAIN, Eat Well Global, and SUN Business Network. Workforce Nutrition Alliance: Healthy Food at Work. Version 1.1. https://nutritionconnect.org/nutrition-at-work. Accessed August 5, 2024.

GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet. 2020; 396: 1223-49.

Gelli A. School feeding and girls' enrollment: the effects of alternative implementation modalities in low-income settings in sub-Saharan Africa. Frontiers in Public Health. 2015;3: 76. https://doi.org?10.3389/fpubh.2015.00076

Gorgulho B.M., Pot G.K., Sarti F.M., Marcioni M. Indices for the assessment of nutritional quality of meals: a systematic review. British Journal of Nutrition. 2016;115: 2017-2024.

Poinsot R, Maillot M, Masset G, Drewnowski A. A three-component Breakfast Quality Score (BQS) to evaluate the nutrient density of breakfast meals. Front Nutr. 2023;10:1213065.

Wang D., Shinde, S., Young, T., Fawzi, W.W. Impacts of school feeding on educational and health outcomes of school-age children and adolescents in low- and middle-income countries: A systematic review and meta-analysis. Journal of Global Health. 2021;11: 04051. https://doi.org/10.7189/jogh.11.04051

WFP. State of School Feeding Worldwide 2022. Rome, World Food Programme; 2022.

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