

Nourishing the Future: Sustainable Food Systems
for Nutrition and Dietetic Students

Module 2: Food Systems for All

Practice and Resources Booklet



JOHNS HOPKINS
CENTER *for* A LIVABLE FUTURE

FOOD + PLANET

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Last revised: December 2, 2025

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Case Study 1: The Impact of New Supermarkets in Food-Insecure Communities

Background

Food-apartheid neighborhoods have limited access to affordable and nutritious food, often leading to poor dietary habits and associated health issues among residents. A common intervention is introducing new supermarkets to these areas, aiming to improve access to healthy food options. However, studies suggest that simply increasing the number of supermarkets may not be sufficient to change purchasing behaviors. Other factors, such as food preferences, economic constraints, and education play significant roles.

Case Scenario

In 2022, a new supermarket was established in a designated food desert in a mid-sized American city. The area had limited access to fresh produce, forcing residents to rely heavily on convenience stores and fast-food outlets. Six months after the supermarket's opening, public health officials conducted a study to assess changes in residents' dietary habits.

Findings

- **Minimal dietary change:** Despite improved access, there was little change in the consumption of fruits and vegetables among residents.
- **Persistent economic barriers:** Many residents faced financial constraints, making healthier food options less affordable.
- **Cultural food preferences:** Established dietary habits and preferences remained unchanged, with a continued reliance on familiar, processed foods.
- **Lack of nutrition education:** There was a noticeable gap in knowledge regarding healthy eating and meal preparation.

Key Points

- Introducing new supermarkets into food deserts does not automatically lead to improved dietary habits among residents.
- Studies suggest that simply increasing the number of supermarkets may not be sufficient to change purchasing behaviors.
- Other factors (such as food preferences, economic constraints, and education) play significant roles.

Discussion Questions

Consider all provided information in your group discussion of the questions below.

1. Why might introducing a supermarket alone be insufficient to improve dietary habits in food deserts?
2. What additional strategies could be implemented to address the economic and educational barriers identified in this case?
3. How can dietitians work with communities to encourage culturally appropriate healthy eating practices?
4. What role does nutrition education play in changing food purchasing behaviors, and how can it be effectively delivered in underserved communities?

Case Study 2: The Dietary Guidelines for Americans

Background

The Dietary Guidelines for Americans (DGA) are updated every five years to provide evidence-based nutrition recommendations that promote health and prevent disease. This process is managed by the United States Departments of Agriculture (USDA) and Health and Human Services (HHS), incorporating extensive scientific review, public input, and policy considerations. In recent years, there has been growing attention to equity and lived experiences, recognizing that nutrition recommendations must address systemic disparities in food access, affordability, and cultural relevance.

For example, one of the most significant discussions in 2020 DGA updates involved dairy recommendations and lactose intolerance, particularly among Black, Indigenous, Asian, and Latino populations, where it is more common. Historically, dairy has been recommended as a primary source of calcium and vitamin D. However, equity advocates urged that alternatives be explicitly included, as many communities experience discomfort from consuming dairy but may not have access to fortified plant-based options. In response to public input, the DGA 2020–2025 edition acknowledged lactose-free dairy and fortified soy beverages as equivalent options, shifting towards greater inclusivity. This change reflects how lived experiences and advocacy efforts can influence national nutrition policy.

The DGA Process

1. **Scientific review:** An independent DGA Committee (DGAC) examines current nutrition science.
2. **Public and expert input:** Researchers, health care professionals, and the public can submit comments and recommendations.
3. **Policy drafting:** USDA and HHS use scientific evidence and public feedback to create the guidelines.
4. **Final publication and implementation:** The guidelines are released and integrated into federal nutrition programs—for example, the Supplemental Nutrition Assistance Program (SNAP) and school meal programs.

Assignment

You are part of a community health task force that is preparing to submit recommendations for the next edition of the DGA. You note that equity issues were a significant focus in the latest update, particularly regarding how dietary recommendations affect populations with historical disparities in food access and nutrition-related health outcomes. You want to ensure that these next guidelines also address the needs of diverse populations, including those facing food insecurity and diet-related chronic diseases.

Discussion Questions

Consider all provided information in your group discussion of the questions below.

1. How does the guidelines development process ensure that recommendations are evidence based and accessible for all? What gaps do you see?
2. How did recognizing lactose intolerance in diverse populations impact equity in the DGA?
3. In what ways can dietitians contribute to shaping the guidelines?
4. How do the guidelines influence federal nutrition programs and public health policies?
5. What other cultural or economic barriers should be considered in future DGA updates?
6. How can you use the DGA to guide nutrition counseling, community education, or policy advocacy—particularly for diverse populations?

Case Study 3: Budget-Conscious Meal Planning

Background

Nutrition is crucial for managing weight and supporting overall health, especially for individuals involved in glucagon-like peptide-1 (GLP-1) receptor agonist clinical trials for weight loss. However, financial constraints can impede the ability to maintain a balanced diet, particularly when food budgets are very tight.

Case Scenario

- **Client:** A single adult living alone who struggles with obesity and is currently enrolled in a GLP-1 clinical trial for weight loss.
- **Financial situation:** After covering her mortgage, utilities, and other essential bills, she has only \$25–\$50 to spend on food every two weeks (~\$1.75–\$3.50 a day).

Assignment

Your goal is to help your client create a practical, budget-friendly meal plan that aligns with her financial limitations, dietary needs, and GLP-1-related appetite changes. More specifically, you must consider:

- Affording fresh produce, lean proteins, and other nutritious foods on a low budget
- Potential side effects of GLP-1 medications, such as nausea and changes in appetite
- Need for satiety and balanced nutrition to support weight loss while preventing nutrient deficiencies

Discussion Questions

Consider all provided information in your group discussion of the questions below.

1. How would you prioritize food choices to ensure nutrient density while staying within her budget?
2. What affordable protein sources would most benefit satiety and maintaining muscle?
3. How can SNAP benefits or local food assistance programs support her situation?
4. Given the side effects of GLP-1 medications (e.g., nausea, early satiety), how would you adjust portion sizes and meal timing?
5. What strategies can you recommend for meal prepping and stretching her food budget over two weeks?

Application in Practice

Create a 7- or 14-day meal plan using low-cost, high-nutrient foods that align with her budget and medical needs.

Supplemental Activity 1: Systems-Informed Education

Objective

Create a sector-specific nutrition education handout that:

- Aligns with cultural values and practices
- Accounts for the food environment and access
- Considers social determinants of health (SDOH)
- Applies a systems lens to food and nutrition issues

Instructions

1. **Sector choice:** Select one of the following options to focus on:
 - Youth and schools (SNAP-Education, school lunch programs, etc.)
 - Culinary education (community cooking, culinary school, etc.)
 - Worksite and organizational wellness (stress management, health screenings, etc.)
2. **Research and analysis**
 - Identify the target population's cultural background(s)
 - Investigate social determinants of health that affect food access (income, transportation, education, etc.)
 - Explore the food environment (availability of healthy foods, local stores, fast food density, etc.)
 - Look at existing programs (SNAP- Education, Cooking Matters, Eat Smart NY, etc.)
3. **Content creation:** Ensure that your handout is:
 - Culturally tailored (language, imagery, dietary patterns)
 - Visually engaging (infographics with simple language)
 - Actionable (small behavior-change tips)
 - Accessible (low literacy-friendly, translated if needed)
4. **Content creation:** Ensure that your handout contains:
 - A nutrition topic (smart snacking, healthy lunches, meal prep on a budget, etc.)
 - A systems component that connects personal behavior to policy and/or environment

Supplemental Activity 2: Food-Security Threats

Objective

Consider the four dimensions of food security:

1. Stability
2. Utilization
3. Access
4. Availability

Think about the different ways that environmental sustainability may impact them.

Background

Let's start with *food availability*. On the farm, we can lose crops and food to floods, drought, or pests. As climate gets less stable and we have more severe weather events, food production is becoming riskier and more challenging. Severe weather can also destroy roads and buildings, thus disrupting food transportation, processing, distribution, and storage.

Planetary health can also impact *food access* in similar ways. But it can also influence a person's ability to get their own food—even if it's in their community—in cases of emergency, severe weather, or when ecological challenges disrupt economies and employment. Water safety and quality is a huge factor in all these domains, including food utilization and food stability.

Chart 1, below, shows the different ways that environmental sustainability may impact food stability, utilization, access, and availability.

Chart 1. Four dimensions of food security and how they are affected by environmental sustainability.

Dimension	Impact of environmental sustainability
1. Stability	Unemployment, compromised water quality and quantity
2. Utilization	Poor hygiene, illness, insecure housing, improper storage
3. Access	Increased prices, built infrastructure damage, supply chain disruption
4. Availability	Crop loss, pest outbreaks, extreme weather events (floods, droughts)

Instructions

Using the example above as a guide, fill in Chart 2, below, to list some other ways that the environmental components of our food system may impact the four dimensions of food security. It may be helpful to refer to Appendix A, *Impacts of Climate Change on Human Health*, that similarly bridges environmental manifestations of climate change along with human health impacts.

These connections go both ways. The health of our planet affects future food security, but the way that we produce our food and the increase reliance on meat and highly processed foods produced in unsustainable ways is destroying our planet's resources and putting food security in jeopardy.

You can probably think of 20 other connections between food security and environmental sustainability. It is clear that we all—including those who have never worried about our own food security—need to take care of our planet if we want to be food secure in the future.

Chart 2. List some other ways that the environmental components of our food system may impact the four dimensions of food security.

Dimension	Impact of environmental sustainability
1. Stability	
2. Utilization	
3. Access	
4. Availability	

Supplemental Activity 3A: Food as Medicine

Objective

Design a 1–2-page outline for a produce prescription program (PrX) that:

- Is regionally specific and informed by community members.
- Advances food access, justice, and sovereignty depicted in Appendix B.
- Features the work of interdisciplinary teams and/or multistakeholder partnerships.

Instructions

1. **Location choice:**
 - Select a municipality that is proximal to where you live and/or in which you have community ties.
2. **Research and analysis:**
 - Read [Corbin Hill Food Project \(2024\)](#) and [Gonzalez et al \(2025\)](#) to familiarize yourself with the Food Access, Justice, and Sovereignty (FAJS) framework and the Food as Medicine (FAM) approach to risk reduction and management of diet-related chronic disease.
 - Review any additional literature necessary for thoughtful planning such as [Gillespie et al \(2025\)](#).
 - Conduct at least one interview with a community member as part of an informal needs assessment.
3. **Program design:** Ensure that your plan addresses:
 - All four levels of the FAJS framework and their respective features.
 - Common shortcomings and missteps of FAM interventions and how your program will move beyond individual health outcomes to promote local food system sovereignty.
 - What success looks like at various timepoints (<1, 1–2, >3 years) and how it will be measured.
4. **Program design:** Ensure that your plan includes:
 - A justification of its necessity and/or explanation of the gap(s) it fills.
 - A community leadership and engagement strategy.
 - A list of local partner organizations and what roles they would fulfill (funding, logistics, etc.).

Supplemental Activity 3B: Food as Medicine

Objective

Evaluate an existing produce prescription (PrX) program based on its alignment with the Food Access, Justice, and Sovereignty (FAJS) framework depicted in Appendix B.

Instructions

1. Program choice:

- Select a program or organization with a website that provides details about their operation and/or contact information to reach out with questions (Farmacy WV is an example that provides both)

2. Background research:

- Read [Corbin Hill Food Project \(2024\)](#) and [Gonzalez et al \(2025\)](#) to familiarize yourself with the FAJS framework and the Food as Medicine (FAM) approach to risk reduction and management of diet-related chronic disease.
- Review any additional literature and resources necessary for a thoughtful analysis.

3. Written report: Ensure your evaluation addresses:

- The connection between the FAJS framework, FAM model, and PrX programs.
- What your chosen program does to advance FAJS and where it falls short.
- Recommendations for how they could promote a more sovereign and equitable food system.

4. Written report: Ensure your evaluation is composed in:

- Plain language and that any technical terminology is defined.
- A concise and easy-to-follow format.

Learn More

Food Security

- [Food Apartheid: Racialized Access to Healthy Affordable Food](#)
- [Food and nutrition security definitions, constructs, frameworks, measurements, and applications: global lessons](#) (see Figure 1, page 2)
- [Household Food Security in the United States in 2023](#)
- [A Framework for Assessing Effects of the Food System](#)

Culturally-Minded Food

- [Culturally Responsive Food Initiative](#)
- [Office of Minority Health: Our Mission](#)
- [From Plate to Planet: Culturally Responsive Culinary Practices for Health System Innovation](#)
- [Cultural Food Traditions](#)
- [Cultural Humility in Food and Nutrition](#)
- [Culturally and Religiously Inclusive Foods Offered in Food and Nutrition Service Programs](#)

Assessments

- [Developing and Assessing Nutrition Education Handouts \(DANEH\) Checklist](#)
- [Self-Assessments](#)
- [Addressing Biases in Patient Care with the 5Rs of Cultural Humility Clinician Coaching Tool](#)
- [Implicit Association Test \(IAT\)](#)

Framework for Action

- [Cultivating Sustainable, Resilient, and Healthy Food and Water Systems: A Nutrition-Focused Framework for Action](#) (see Figure 2, page 1059)
- [Future of Food](#)
- [Putting Local Food Policy to Work for Our Communities](#)

Food Sovereignty and Equity

- [Food as Medicine Through the Lenses of Food Access, Justice, and Sovereignty](#) (see Figure 1, page 16)
- [Food Sovereignty Prize](#)
- [La Via Campesina](#)

Glossary

Cultural relevancy. Effectively reaching and engaging communities in a manner that is consistent with their context and values while effectively addressing the disparities of diversity and inclusion within a broader structure. ([Youth Development Network, 2025](#))

Cultural responsiveness. Understanding and appropriately valuing to the combination of cultural variables and the full range of diversity that an individual brings to interactions and integrating this into policies, practices, and interaction that go beyond tolerance to active engagement. ([Hopf et al, 2021](#) and [Oxford Review, 2025](#))

Equality. The concept that all human beings, regardless of sex, are free to develop their personal abilities, pursue their professional careers and make choices without the limitations set by stereotypes, rigid gender roles and prejudices ([United Nations Habitat, 2015](#))

- Each individual or group of people has access to the same resources or opportunities ([International Women's Day, 2023](#))

Equity. The concept that the dimensions of our identity and other dimensions of difference (defined by social, economic, demographic, and/or geographic characteristics) are no longer predictive of unjust cycles of harm, and oppression across generations is stopped. ([California Health and Human Services, 2023](#))

- Recognizing that each person has different circumstances and allocates what each individual needs to reach an equal outcome ([International Women's Day, 2023](#))

Food apartheid. A system of segregation that divides those with access to an abundance of nutritious food and those who have been denied that access due to systemic injustice. ([Project Regeneration, 2025](#))

Food desert. A geographic area where residents' access to affordable, healthy food options (especially fresh fruits and vegetables) is restricted or nonexistent due to the absence of grocery stores within convenient traveling distance ([Food Empowerment Project, 2025](#)) that may contribute to social and spatial disparities in diet and diet-related health outcomes. ([Beaulac et al 2009](#))

Food environment. The consumer interface with the human-built physical, social, economic, cultural, and political factors that impact the accessibility, availability, and adequacy of food within a community or region. ([National Collaborating Centre for Environmental Health, 2015](#))

Food policy council (FPC). An organized group of stakeholders from various sectors that works to address food systems issues and needs at the local (city/municipality or county), state, regional or tribal nations levels through policy ([Johns Hopkins Center for a Livable Future](#))

Food security. A situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. ([Committee on World Food Security, 2014](#))

Food sovereignty. The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. ([La Via Campesina 2025](#))

Healthy Food Priority Area (HFPA). An updated term for *food desert* created with community input by the Baltimore City Health Department that is defined in the same way but acknowledges there are causal factors:

- A lower-income area with a large amount of unhealthy food options and long travel times to retailers providing healthy options. ([Wool et al, 2021](#))
- An area where the average Healthy Food Availability Index (HFAI) score for all food stores is low (0–9.5), the median household income is at or below 185 percent of the Federal Poverty Level, over 30 percent of households have no vehicle available, and the distance to a supermarket is more than one quarter of a mile. ([Misiaszek et al, 2018](#))

Local food policy. Municipal, county, township (local) laws, regulations, decisions and actions by governments and other institutions that affect food production, distribution, consumption and disposal ([Farnsworth, 2025](#))

Nutrition security. Consistent access, availability, and affordability of foods and beverages that promote well-being and prevent and if needed, treat disease ([United States Department of Agriculture](#)) that highlights the biological dimension of food rather than solely the physical aspects of its availability. ([Moore, 2021](#))

Planetary health. The interdependent health of both humans and the environment, recognizing that the two are inseparable and that the health of one is intricately linked to the health of the other. ([Mago et al, 2024](#))

Social determinants of health (SDOH). The conditions in which people are born, grow, work, live and age, and the wider forces that shape the conditions of daily life. ([World Health Organization, 2025](#))

Supplemental Nutrition Assistance Program (SNAP). A federally-funded program that provides food benefits to low-income families to supplement their grocery budget so they can afford the nutritious food essential to health and well-being. ([United States Department of Agriculture Food and Nutrition Services, 2025](#))

Sustainable food system. A food system that delivers food security and nutrition for all in such a way that the economic, social, and environmental bases to generate food security and nutrition for future generations are not compromised. ([The Secretary-General's High-Level Task Force on Global Food and Nutrition Security, 2015](#))

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Appendix A: Impacts of Climate Change on Human Health

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Air Pollution & Increasing Allergens

Asthma, allergies, cardiovascular and respiratory diseases

Extreme Heat

Heat-related illness and death, cardiovascular failure

Drought

Water supply impacts, dust storms, Valley Fever

Environmental Degradation

Forced migration, civil conflict, loss of jobs and income

Wildfires & Smoke

Injuries, fatalities, loss of homes, cardiovascular and respiratory diseases

Mental Health Impacts

Rising Temperatures



IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH



More Extreme Weather



Increasing GHG Levels



Rising Sea Levels

Degraded Living Conditions & Social Inequities

Exacerbation of racial and health inequities and vulnerabilities, loss of employment

Changes In Vector Ecology

Lyme disease, West Nile Virus, hantavirus, malaria, encephalitis

Food System Impacts

Malnutrition, food insecurity, higher food prices, foodborne illness

Severe Weather & Floods

Injuries, fatalities, loss of homes, indoor fungi and mold

Water Quality Impacts

Harmful algal blooms, campylobacteriosis, cryptosporidiosis, leptospirosis

(Adapted from CDC; J. Patz)

Appendix B: The Food Access, Justice, and Sovereignty Framework

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The Food Access, Justice, and Sovereignty Framework

FOOD ACCESS

- More convenient access points
- May be Affordable, incentives
- May / not encompass Food security



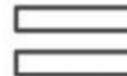
FOOD DISPARITIES

- Inequitable distribution of food



FOOD SOVEREIGNTY

- Community designs & defines programs
- Community defines metrics of program
- Communities are actively engaged in commerce
- Community ownership of food assets and an active participant of the food ecosystem
- Ecosystem of connected enterprises and consumers



FOOD JUSTICE

- Movement Building
- Community is informing new food policy
 - Narrative change
- Racial equity lens, addressing disparities
 - Equitable balanced partnerships
 - Cultural foods
 - Community Input
- Community benefits from the distribution of food