

# Food Decision-Making Framework: Connecting Sustainable Food Systems to Health and Well-Being

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**ABSTRACT.** This article presents a conceptual framework for understanding the interrelationships among sustainable food systems, food decision-making, and health and well-being. The Food Decision-Making Framework (FDF) builds upon findings from food decision-making research and community-based practice. It draws upon concepts and theories related to decision-making and family and community interaction from human ecology, community development, agriculture and food systems, and systems thinking. This article provides an overview of the theoretical and empirical underpinnings of the framework and describes the interrelationships among the components. Research and community food system examples illustrate its utility for framing research questions, interpreting findings, and applying research to program and policy planning.

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## *INTRODUCTION*

This article presents the Food Decision-Making Framework (FDF), which expands upon the notion of individual behavior change to consider behavior change within the context of families and communities. The FDF is a conceptual framework that emphasizes the relationships among sustainable food systems, family food decision-making, and health and well-being. It builds upon findings from food decision-making research and community-based practice. The FDF draws upon concepts and theories related to decision-making and family and community interaction from human ecology, agriculture and food systems, community development, systems thinking, and decision-making. Although initial research was completed with families and communities in the United States, it has expanded globally through collaborations with scholars from Korea, Kenya, and the Philippines.

Through the process of engagement in the community food system, families can build relationships that support health and well-being. The association between sustainable food systems and well-being can be direct, or mediated through the family environment. This article describes the FDF, its theoretical underpinnings, and its applications for research, education, and action.

### *Systems Thinking and an Ecosystems Perspective*

Variants of systems theory and systems thinking have been utilized by experts in many different fields. The concept of systems thinking employed in the FDF is rooted in the work of Boulding<sup>1</sup> and Deacon and Firebaugh<sup>2</sup> and draws from Bandura<sup>3,4</sup> and Bronfenbrenner,<sup>5</sup> among others. The framework's conception of systems thinking has also benefited from Trochim et al's discussion of recent developments in systems thinking.<sup>6</sup>

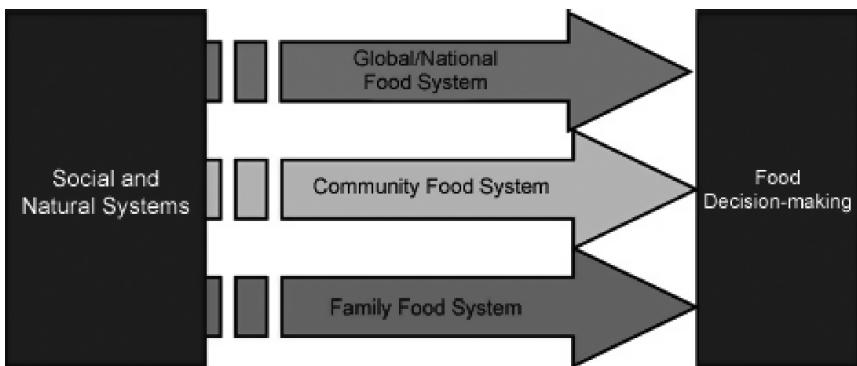
Trochim et al<sup>6</sup> define systems thinking as "a general conceptual orientation concerned with the interrelationships between parts and their relationships to a functioning whole, often understood within the context of an even greater whole."<sup>6</sup> They describe 2 organizing ideas: dynamics and complexity in their discussion of systems thinking and modeling. Dynamics deals with change, a core concept of the FDF, which includes consideration of community systems and family systems and their

interconnectedness. The FDF also encompasses the complexity of food decision-making. Complexity theory, or the study of complex adaptive systems, focuses on understanding systems that are both self-organizing and unpredictable. Complex systems “. . . consist of many interacting stakeholders with often different and competing interests. Agents in these networks must constantly adapt to the actions of others and to a changing environment that is in turn affected by the actions of the agents themselves.”<sup>6</sup>

The FDF applies systems thinking to an ecological perspective. Bronfenbrenner defines a bioecological approach as, “the scientific study of the progress and mutual accommodation throughout the life course, between an active growing human being and changing properties of the immediate settings in which the developing person lives, as this process is affected by the relationships between settings in the larger context in which the settings are embedded.”<sup>7</sup> An ecosystem is the totality of organisms and environments that interact interdependently.<sup>2,8</sup> The ecosystems approach of the FDF includes social systems as well as natural systems.

Figure 1 illustrates family food decision-making as a function of the family food system embedded within the context of the community, national, and global food systems. Family members interact among themselves to consider individual goals and food and eating preferences; they also engage with their community food system to understand its opportunities and constraints. Depending upon their level of engagement, families may also influence their community food system and potentially the national and global food systems directly or indirectly.

FIGURE 1. An Ecosystems Approach to Family Food and Eating.



Each food system consists of elements from social and natural systems. Social systems include economic, sociocultural, political, and technological realms. Natural or structured systems include physical, biological, and human-made or built realms. Natural and social systems function at all levels of the food system including the family food system, the community food system, and the national and global food systems. In addition, families and family members are participants in all levels of the food system in the overall context of society (Figure 1).

### ***Food System Models***

There are several models and frameworks from the fields of nutrition, agriculture, sociology, and economics that deal with the food system. Agri-economist Shaffer<sup>8</sup> outlines a conceptual model of the food system in economic terms in which the participant's options are framed by a series of boundaries. He states that the physical environment makes up the outermost boundary, followed by organizations or social constructs that are made up of political, social, economic, and cultural systems. He emphasizes that the individual participant will only be exposed to a small subset of the aggregate ecosystem and will be most influenced by the environment that affects him directly. In their ecological model, Deacon and Firebaugh describe a similar idea with the term "microenvironment." Dahlberg<sup>9,10</sup> stresses that we must go beyond focusing on production to a more inclusive analysis of the food system that includes production, processing, distribution, use, and recycling of waste. He also stresses the importance of analyzing the social and technological systems as well as the natural system. He suggests that although the household is often overlooked in the food system, it plays an important role and a more substantive focus would benefit the systems perspective. Sobal et al<sup>11</sup> outline previous food system models by specifying 4 categories: food chain (flow model), food cycle (circular model), food web (network model), and food context (ecological model). Sobal et al propose a model that illustrates the linear flow of the food system within social and biophysical contexts.<sup>11</sup> Heller et al<sup>12</sup> use a life cycle approach that follows food from origin to death (waste) to assess the strengths and weaknesses of the food system. They advocate a systems approach for aiding in reestablishing the connection between consumption and production practices. Heller et al state that "a holistic approach aimed at reestablishing the connective role that food serves among personal health, environmental health and societal well-being has the potential to advance the sustainability of our food

system.”<sup>12</sup> Feenstra notes, “The way our food is grown, processed and distributed affects health. It also affects the environmental, social and economic health of our communities.”<sup>13</sup> Peters adds that with the complexity of the food system, the link between the food system and health is not always clear.<sup>13</sup>

From the recent literature outlined above, one can conclude that there is a perceived link between food systems, health, and well-being, but there is little conceptual groundwork for elucidating the connection. Bronfenbrenner states that it is necessary to have a systematic conceptual framework so that formulations and designs can be explicitly classified and ordered.<sup>14</sup> Although several of the articles address health, none of the models or frameworks illustrates the complex interactions between health and the layers of the ecosystem, community, and family. While Sobal et al’s conceptual model advances theory by being one of the first to consider the role of health in the food system, they focus primarily on the biological link between the food system and health.<sup>11</sup> The FDF goes beyond a biological explanation for the connection to include the social, political, economic and cultural connections as well.

Another important piece of the FDF is the emphasis placed upon the role of the family. In literature, there is often a disconnect between a systems perspective and an individualistic perspective. While food systems do provide limitations and constraints, one must still acknowledge the power of individuals within the system. An emphasis placed upon family illustrates the power that families as well as individuals have as participants in their food systems. Shaffer<sup>8</sup> recognizes that in any given place or time, the participants of a food system change their environment, and the environment in turn changes the participants in an ever dynamic ecosystem. While other research has delineated health as an output or outcome, the FDF addresses the idea that the health and well-being of an individual, family, or community can also affect the food system. The following sections describe the theoretical, empirical, and experience-based knowledge on which the FDF for connecting food systems to health and well-being is built.

### ***THEORETICAL AND EMPIRICAL UNDERPINNINGS***

As all human beings must eat, food and eating often lie in the center of otherwise diverse family structures. By examining food and eating and the decisions that surround the issue, we can also explore the interrelationships

with other implicit and explicit decisions, such as healthcare, physical activity, housing, child and family development, transportation, and civic engagement. The Food Decision-Making Program's mission is to help people think differently about food and eating and the interrelationships within the food system.

The Food Decision-Making Program's vision is health and well-being for all, where children and their families are (1) supported by sustainable, just, and equitable community food systems; (2) developing healthy attitudes toward food and eating; (3) making thoughtful food decisions; (4) bringing their behaviors in alignment with their understandings and goals and with current scientific knowledge; (5) engaging in community improvement (including improvements in the food system). The Food Decision-Making Program follows an ecosystems approach, which stresses the importance of the interactions between the community food system and the family food system. In addition, the ecosystems approach illustrates the interrelationships with other natural and social systems.

In addition to theory developed from food decision-making research and program evaluation, literature in the fields of human ecology, community development and systems thinking, and decision-making provided a theoretical and empirical base for the development of the FDF. Bandura's social cognitive theory aids in understanding, predicting, and changing behavior. The theory describes human behavior as an interaction of personal factors, behavior, and the environment. Social cognitive theory is helpful for understanding and predicting both individual and group behavior and identifying methods in which behavior can be modified or changed.<sup>3,15</sup> Bandura stresses the importance of combining research with outreach through his work on social outreach.<sup>16</sup> Although Bandura's work focuses upon utilizing media to change behavior, his emphasis on engaging community systems to involve families in the process of behavior change shares many fundamental similarities to the FDF.

Another psychologist, Urie Bronfenbrenner, takes a human development approach in his bioecological framework. He defines human development as "the scientific study of the conditions and processes shaping the biopsychological characteristics throughout the life course and across successive generations."<sup>14</sup> Although Bronfenbrenner recognizes the social environment, he focuses primarily on the biopsychological and places the child in the middle of his ecological model.<sup>14</sup>

From their family resource perspective, Deacon and Firebaugh included the concept of systems thinking as well as environments within their ecological system. Therefore, changes in one component of the

system influence other components, and children and their families are influenced by their food system within the overall context of society.<sup>17</sup>

Community development also provided input into the FDF. Community development is the improvement in the quality of interaction among people living in a certain locality over time. Community development occurs when people define assets and use processes of constructive engagement to build upon those assets.<sup>18</sup> The building of social relationships between the larger community and the family are essential for linking sustainable food systems to health and well-being.

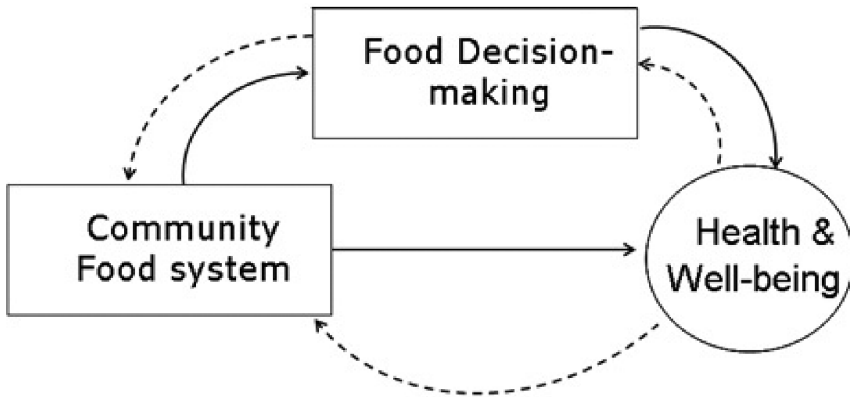
Decision-making research and theory is integral to the FDF. Zey<sup>19</sup> views decision-making as a complex system that includes rational action, decisions based upon emotional feelings and decisions based in habit. Moral and emotional actions may have fundamentally different sources of valuation and different explanations than actions produced by rational choice. For example, a beloved holiday meal may have no rational basis but may be served every Christmas as part of a cultural tradition. According to Scanzoni and Szinovacz,<sup>20</sup> the most significant findings concerning family decision-making are the sequences on which decisions are negotiated. The process of engagement and the relationships between communities and their families are just as important as the end result of health and well-being.

Engaged research brings together grounded theory, which is the reality and understandings of daily life, with research and theories from systems thinking, ecology, decision-making, human development, communication, and education. The process of engaged research includes using an asset-based approach, while honoring experiential knowledge, everyday-life theory, and perspectives of families and community-based stakeholders, as well as scientific knowledge and research methodologies.<sup>21</sup>

### ***THE FOOD DECISION-MAKING FRAMEWORK***

The process of food decision-making is situated within the greater food system, and people make decisions about food and eating for a variety of reasons that are based in a long-standing engagement with food and the food system. Sustainable food systems can help to strengthen health and well-being through this process of engagement. Understanding the connections among sustainable food systems, food decision-making, and health and well-being can support healthy food decision-making and strengthen health and well-being.

FIGURE 2. Food Decision-Making Framework: Connecting Sustainable Food Systems to Health and Well-Being.



This section describes the Food Decision-Making Framework, which connects sustainable food systems with health and well-being for research, education, and action. The framework is based upon the theoretical and empirical underpinnings described above, as well as current and past research. The FDF (see Figure 2) illustrates the interrelationships among family food decision-making, community food systems, and the health and well-being of individuals, families, and communities. In Figure 2, the dominant interrelationships are demonstrated by the solid arrows, while emerging relationships are illustrated by the hatched arrows.

### *Conceptualizing a Sustainable Food System*

According to G. Gillespie,<sup>22</sup> the food system includes foundations for producing food and natural products; the social aspects of consumption; relevant government and other policies; the actual growing, processing, and distributing of substances that result in foods that people consume or use in other ways; and the process of removing, processing, storing, or reusing waste. A community food system is that part of a food system that is located in a particular community. In this context, community is usually a geographic location; i.e., a community of place. However, in some instances, community may be defined by social systems or common identity.<sup>18</sup> With advancements in transportation and telecommunication, communities can comprise groups of people that are spotted around the world. Communities can also be characterized by political boundaries.<sup>18</sup>



The FDF adds sustainability to the concept of food systems by describing a community food system that fosters sustainable community and economic development by emphasizing locally produced food but that also includes thoughtfully selected imported foods to meet nutritional needs and taste preferences.

The term “local food” can have multiple meanings depending upon the particular context and/or one’s orientation. For the purposes of the FDF, local has several elements: where and by whom the basic ingredients were grown, where and by whom it was processed, where and how it was retailed, and where and by whom it is consumed.

Considering all of these elements of local, complete local or regional food and agriculture self-sufficiency is neither a practical nor desirable option for most communities. Certain areas of geography are better suited for growing produce, grain, and/or raising livestock, while in other areas, there is little variety available. As good nutrition and appealing diets depend upon eating a variety of different foods, it is often necessary to import some foods at different times of the year. At the same time, it is not economically or socially practical to raise certain foods locally. There is some level of international and domestic trade that is beneficial to importing and exporting communities. For example, eating oranges or grapefruit from Florida or California during an Iowa winter may be a healthy and sustainable choice. While it may be possible to get a sufficient quantity of vitamin C from sauerkraut produced from cabbages in upstate New York during the winter months, for most children and their families, it is not a viable approach.

However, a number of communities and families are recognizing that greater self-sufficiency, through moving toward a greater proportion of locally produced and marketed food, has economic, environmental, and safety benefits, as well as health benefits for children and their families. Community food systems must be sustainable if they are to foster health and well-being not only in our generation but into future generations. Sustainable food systems not only foster health and well-being of children and families, they also contribute to building community and supporting economic development. Sustainable food systems are also integrated with the laws of nature as well as social systems to preserve natural resources.<sup>23</sup>

### ***Food Decision-Making***

The Family Food Decision-Making Cycle (see Figure 3) provides the foundation for understanding family food decision-making and guiding

FIGURE 3. Family Food Decision-Making Cycle.



food systems interventions. A family food decision-making unit is any configuration of adults and children who regularly eat together, or eat from the same household food resources, and who mutually influence decisions about food. Stages in the family food decision-making cycle<sup>17</sup> are (1) determining issues associated with a food event that requires considering alternatives outside the usual routines and established food policies; (2) identifying and assessing perceived practically available alternatives to meet family goals; (3) evaluating and choosing among the alternatives, i.e., deciding; and (4) implementing the chosen alternative. Decisions may be on choice of foods, eating environment, food roles, strategies for mobilizing family food resources, or expected child food behaviors (i.e., family food policies).

Effective food decision-making requires not only functional cognitive processes but also specific information about foods—such as their health effects, children’s food preferences, adequate available family and community resources (i.e., food, transportation, knowledge, skills, equipment, time, money, and a sense of self-efficacy), and other considerations like perceptions of contaminant levels. The family food decision-making

processes include an array of simultaneous food activities related to acquiring, transforming, and consuming food.<sup>17</sup>

The Family Food Decision-Making process is also applicable at the community level. Whether communities are based upon geography or common identity, communities consist of a conglomerate of families and stakeholders that have common and competing interests. By making food decisions based upon common and complementary stakeholder interests, a community can gain greater self-sufficiency and a sense of empowerment. Recognizing community-level food decision-making will aid in understanding how families can effect change in the community, national, and global food systems.

### ***Health and Well-Being***

Historically, the concept and measurement of health has focused upon illness and disease. When the World Health Organization (WHO) defined health as “a state of complete physical, mental, and social well-being and not merely the absence of disease, or infirmity,” they expanded the narrow focus on disease pathology to a more inclusive concept that went beyond physical aspects of existence. Today, the terms health and well-being are often used interchangeably with little consensus on the actual meanings of the concepts.

In the biomedical field, the term manifests as nutritional well-being, which focuses upon a biological state while stressing morbidity and mortality. Kracht and Schulz define nutritional well-being as an individual’s means or ability to lead an active healthy life.<sup>24</sup> While definitions of well-being vary, it is important to distinguish between nutritional well-being and the broader idea of well-being. According to anthropologist Mary Douglas, well-being should only be approached from the latter view in which well-being is placed within the social and cultural environments.<sup>25</sup>

In the field of family and consumer sciences, the literature focuses upon family well-being instead of individual well-being. Braun and Bauer describe well-being as the condition of health, happiness, and freedom from want. They also state that well-being is the state of being where all basic needs are met, and for that state to be sustainable, one must maintain a sense of future well-being as well as current well-being.<sup>26</sup> Zimmerman<sup>27</sup> outlines several definitions that discuss satisfaction with life domains.

From the field of public health, Buchanan<sup>28</sup> describes well-being as living well, through engaging in social practices that embody the values we wish to bring into being. In the FDF, well-being is applicable to the

individual, family, and community. Buchanan differentiates community well-being by defining it in terms of justice.<sup>28</sup> In the spirit of Buchanan's definitions, communities can build off their common values regarding food and work together to create a community food system that allows them to live the lives within their values.<sup>28</sup>

Through engaged research with communities, the Food Decision-Making Program has found that the definitions of health and well-being vary for individuals, families, and communities. The scientific- and literature-based definitions may not be relevant to the families and communities that community nutrition research attempts to describe. In response, the Food Decision-Making Program has integrated an exploration of perceptions of health and well-being into several ongoing projects.

### ***Connecting Sustainable Food Systems to Health and Well-Being***

Family food decision-making is involved in the translation of the sustainable community food system into health and well-being for children and families. Families are, in essence, the mediating influence, guided by the external environment. Family food decision-making is influenced by the community food system, and internal family food decision-making processes, strategies, and outcomes influence health and well-being. The process in which this occurs is closely tied with the food decisions that families make. These decisions may be conscious or based upon established routines and occur in multiple overlapping contexts.

Although the term well-being is often associated with physical health, the term actually takes a broader perspective than traditional views. Buchanan's definition of well-being, which is stated above, fits nicely into the FDF because it recognizes the different levels of society that include the sustainable community food system and the family food system. The following examples drawn from food decision-making research with academic and community partners illustrate several key points about the relationships among sustainable food systems, food decision-making, and health and well-being.

## ***APPLICATION OF THE FOOD DECISION-MAKING FRAMEWORK***

In this section, applications for research and practice are discussed to understand the relationship between sustainable food systems and health

and well-being through the lens of food decision-making. The following examples are drawn from current and past research led by the Family Food Decision-Making program and collaborators in Kenya, the Philippines, Iowa, and New York. A cross-cultural study of low-income families from the Philippines, Iowa, and New York is discussed, as well interviews in a rural and remote village in Kenya. The Community-Supported Agriculture (CSA) project in Iowa is part of an ongoing research and community development project carried out by collaborators Flora and Bregendahl.

### ***Food Decision-Making in Poverty: Philippines***

In the Philippines, ethnographic interviews were completed with 30 low-income urban families. Families reported having irregular sources of income; therefore, families often had to scavenge for food. Even in the context of poverty, food decisions were made in a conscious and deliberate way. Food management strategies instituted by families were found to have several positive effects on health and well-being. Researchers found that the necessary focus on food management was associated with a strengthening of family cohesiveness and stronger social networks, which are associated with health and well-being.<sup>29</sup> Even in a food insecure context, families can increase well-being. As shown in the Philippines, food systems may become more sustainable because of conscious and deliberate decisions that families make.

### ***Food Decision-Making in Poverty: New York and Iowa***

In New York, 10 interviews were completed with low-income urban ethnic minority families, and in Iowa, 10 interviews were completed with low-income rural families. In Iowa and New York, the contexts of the low-income communities differed greatly. In agrarian Iowa, several of the families described growing some of their own food and in one case hunting supplied most of their meat. When there wasn't enough food, they preferred to rely upon family and friends instead of food assistance programs (L. Eblen, fieldnotes, November 1, 2006). In contrast, most families interviewed in New York reported utilizing food aid from federal, state, and local levels. Families often had intricate strategies for access and use of such aid (K. Dischner, fieldnotes, November 1, 2006). In both communities, families made decisions that worked within their value systems to feed their families. By acting in this manner, both communities were able to advance their health and well-being.

### ***Community Food Decision-Making in Rural Kenya***

Research in a small rural village in Kenya illustrates how a sustainable community food system with strong social ties can support health and well-being even in the context of extreme poverty and frequent droughts.<sup>30</sup> Also illustrated in this community was the changing definition of community and community food system. Many of the families had husbands or sons working in larger towns and sending food and money back to their family. In this case, the food system is not strictly geographically defined. In this community, community food decision-making was a large part of the culture. Social relationships among families, friends, neighbors, and institutions within the local and national/global communities strengthen health and well-being. Buchanan's definition of well-being stresses engagement in social practices; in this community, the relationships and interactions between the greater food system and the family unit create an environment where every child has food to eat. There was a sense of reciprocity in the community, and community members voiced that aiding their family, friends, and neighbors was integral to the culture.<sup>30</sup>

### ***Sustainability and Poverty***

Low-income communities are examples where popular visions of sustainable food systems are not accurate. Families' interactions with the community food system vary considerably depending upon the community context. In communities in the Philippines where neither food aid nor other acceptable means to access food are available, families dominantly reported practices of scavenging for food or other goods that can be refurbished and sold for food resources. While these sources of food may not be thought of as sustainable, families may be able to make decisions that increase the sustainability of their food sources. In Kenya, food aid was achieved locally with neighbors offering work for food. In Iowa, home gardens were common, and in New York, families made intricate decisions to maximize their use of food assistance that was available to them. In each community, families made conscious and deliberate decisions to translate the food system to health and well-being and make the food system more sustainable.

### ***Local Marketing Systems Provide Context for Families to Engage in Community Food Decision-Making: CSAs and Farmers Markets***

CSA projects can provide a forum for exploring how engagement of families in a sustainable food system can enhance health and well-being.

CSAs and other direct marketing arrangements offer the potential for effective partnerships between growers and food consumers for cost-effective and ecologically-sound flows of food from production to consumption. CSAs, in particular, provide opportunities for producers and consumers to come together in a mutually supportive way, so that they are able to clarify and meet individual and shared goals.<sup>31</sup> They also offer an alternative to cumbersome regulation surrounding the industrialization of produce by emphasizing communication based on mutual trust. CSAs are a good example of families participating in community food decision-making.

In a study of a multiproducer, collaborative CSA carried out in Iowa, collaborators Bregendahl and Flora<sup>32</sup> found that CSA participation provides households access to healthy, nutritious, and tasty food, thereby providing incentives for healthy eating. Many families reported that CSA participation not only increases the amount of produce families consume but also the variety. These members say increased produce consumption is the result of changes that the CSAs have provided to each family's food culture by encouraging family members to learn to connect with their food.<sup>32</sup> In this example, the CSA groups act to connect individual families to the greater food system, thereby increasing health and well-being through increased produce consumption and an enhanced appreciation for healthy foods.

Farmers markets provide an example of how a marketplace can serve to connect the local food system, food decision-making, and health and well-being. Farmers markets provide an array of opportunities for producers, consumers, and local community stakeholders. They are community social and economic institutions that can be keystones in building localized food systems. Along with the economic exchange, the common social gathering that takes place within a farmers market can lead to the sharing of ideas and the building of social capital. Farmers markets can also encourage agricultural diversification and thus increase the variety of fresh produce available to families.<sup>33</sup> As farmers markets serve to increase the availability of healthy local produce and build social capital, they strengthen the health and well-being of the family and community. By introducing "food with a face," farmers markets strengthen the ties between families and their food system and empower families to engage within their food system.

### ***Impact of Health and Well-Being on Food Decision-Making and Community Food Systems***

As illustrated by the dotted lines in Figure 1, health can influence family food systems and decision-making. Some examples may include HIV/AIDS,

diabetes, obesity, and undernutrition. Previous research found that chronic diseases, such as the ones listed above, are often the main impetuses for behavior change, both within the family and in the larger community.<sup>34</sup>

The diagnosis of HIV/AIDS can have a significant impact upon family food decision-making and participation in the food system. When one is diagnosed with HIV/AIDS, social prejudices are often immediately internalized and may affect what a person eats and how a person obtains his food.<sup>35</sup> In addition, a significant portion of the population infected with HIV/AIDS can impact the integrity of the food system itself by decreasing productivity of the working population.

Interviews with families in Iowa and New York highlight how diabetes and obesity can affect food decision-making. Interviewees often noted increasing healthy food in the diet as a response to chronic disease. Changing from full-fat milk to fat-free milk or cutting soda from a diet were a few of the changes made in response to diabetes and obesity. Often, food decisions in reaction to chronic disease in one family member would affect the food decisions of the entire family.

Recent research in the Philippines has shown that undernutrition can have varying effects on food decision-making.<sup>29</sup> For some, the discomfort and constant hunger may make family members irritable; these families note that they may argue more. On the other hand, other families in the same village respond to hunger by ignoring the discomfort and working together to feed themselves, with children as well as parents doing what they can to bring food into the family. These key differences highlight the importance of the food decision-making process in achieving health and well-being.<sup>29</sup>

## ***SUMMARY AND CONCLUSION***

The FDF illustrates the interrelationships among sustainable food systems, family food decision-making, and health and well-being. Sustainable food systems can directly affect health and well-being, or the influence can be mediated by family food decision-making. Alternatively, health status can influence family food decision-making and the larger food system.

Most studies have focused upon one specific piece of the ecosystem, whereas the FDF offers a lens through which to examine the important relationships among the different levels of the food systems and within families. This holistic framework includes both social (economic,



sociocultural, political, and technological) and natural (biological, physical, and built) systems. In particular, it focuses on the relationships among and within these systems. Understanding these overlapping structures and relationships can inform decision-makers in families and community food systems and educators who seek systems change to improve individual, family, and community health and well-being. This approach recognizes that improving health and well-being is everybody's business.

### *Future Applications*

The FDF has been used to conceptualize and frame research plans and interpret findings. The framework posits that sustainable food systems are associated with health and well-being via the family food environment. The community food system (including school food systems) may influence the health and well-being of children either directly or through influences upon their family. There are a number of possible influences in the community depending upon the particular context.

The conceptual framework was not designed for statistical or causal purposes. Rather, it helps guide research, education, and action. The framework has helped practitioners as well as researchers understand family food decision-making within an ecosystems context and the interrelationships among sustainable food systems, family food decision-making, and health and well-being. Researchers and practitioners can utilize this framework when designing research projects, nutrition education programs and community development projects. The ecosystems and food decision-making frameworks that create the backbone for this framework have already been used by community-based educators in planning community and family obesity intervention strategies. The framework will aid current and future research by framing emerging themes within a larger ecosystems perspective. For example, data from a collaborating research team in the Philippines found that the core issues for low-income communities are poverty and injustice; food insecurity (as defined in the scientific literature) is only a piece of the ecosystem that influences food decision-making. A framework for understanding the connection among food systems, food decision-making, and health and well-being informs research, education, and action and provides an opportunity for families to engage in the food system and improve health and well-being.

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